

MELBOURNE AREA

DISTRICT 2 REVIEW

PROPOSED RECOMMENDATIONS



 LAND CONSERVATION COUNCIL

**MELBOURNE AREA,
DISTRICT 2, REVIEW**

**PROPOSED
RECOMMENDATIONS**

MARCH 1993

LAND CONSERVATION COUNCIL

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Cover photograph:

*Old-growth ash forest in Melbourne
Water's Wallaby Creek water supply catchment*

Photograph provided courtesy of Melbourne Water

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INTRODUCTION

This report contains the Land Conservation Council's proposed recommendations concerning the use of public land in the Melbourne Area, District 2. The proposed recommendations in the text are grouped under major headings, such as parks, nature conservation reserves, community use areas, and so on. Accompanying the text is a map at the scale of 1:250 000 which covers the whole study area and gives a broad view of the proposed land uses. More detailed maps show the location of the proposed land uses in the vicinity of the Dandenongs, Wonthaggi, Watsons Creek, and Crib Point. Additional information on boundaries is held by the Council.

The Land Conservation Council

The Land Conservation Council was established by the *Land Conservation Act* 1970. One of its three functions as defined by the *Act*, is to carry out investigations for, and make recommendations to, the Minister on the use of public land in order to provide for the balanced use of land in Victoria. In making its recommendations, Council is required to have regard to both the present and future needs of the people of Victoria in relation to the creation and preservation of areas of conservation and recreation value. In this context, the Council endeavours to make recommendations that are relevant to both the present and to 50 to 100 years hence.

Under its legislation, Council must have regard to the social and economic implications of its recommendations. It has also taken the view that it must achieve a balance between community needs of public land as seen from local, regional, State, and national perspectives. As such, it provides for a wide range of uses on public land, including water supply, the harvesting of forest produce, grazing, apiculture, and mineral and stone extraction, as well as conservation and recreation.

Land-use issues are often distinguished by their extraordinary complexity, polarisation of opinion, and the diverse and frequently highly technical matters that must be addressed. Accurate and accessible data are often lacking, debates are frequently unstructured and superficial, and the terms used, such as

conservation, development and sustainability, lack precise, widely understood meanings.

As the Fitzgerald Inquiry Report on Fraser Island (May 1991) points out 'there can be no outcome to this Inquiry or any other process which does not have disadvantages as well as advantages, and which will not result in dissatisfaction and complaints. Ultimately, the decisions which must be made are political and the decisions to be made are about competing values and interests'.

Mr Fitzgerald also stated that 'this report cannot establish indisputable, immutable, factual or scientific findings or apply recognised principles to make recommendations which satisfy every need. Zero-based planning is impossible; the slate is not perfectly clean; the *status quo* includes not only the present natural environment, but also the lives, activities, and aspirations of communities and individuals. Although future options should not be foreclosed where that can be avoided, governments have to make essential decisions, despite uncertainties, on the basis of available information and advice'.

These comments apply equally to these proposed recommendations which, although they draw largely on the available information base, including that provided by the community in discussions and submissions, inevitably involve some judgements based on the Council's view of its requirement to recommend on the balanced use of public land. It is for the government to determine whether to adopt Council's recommendations.

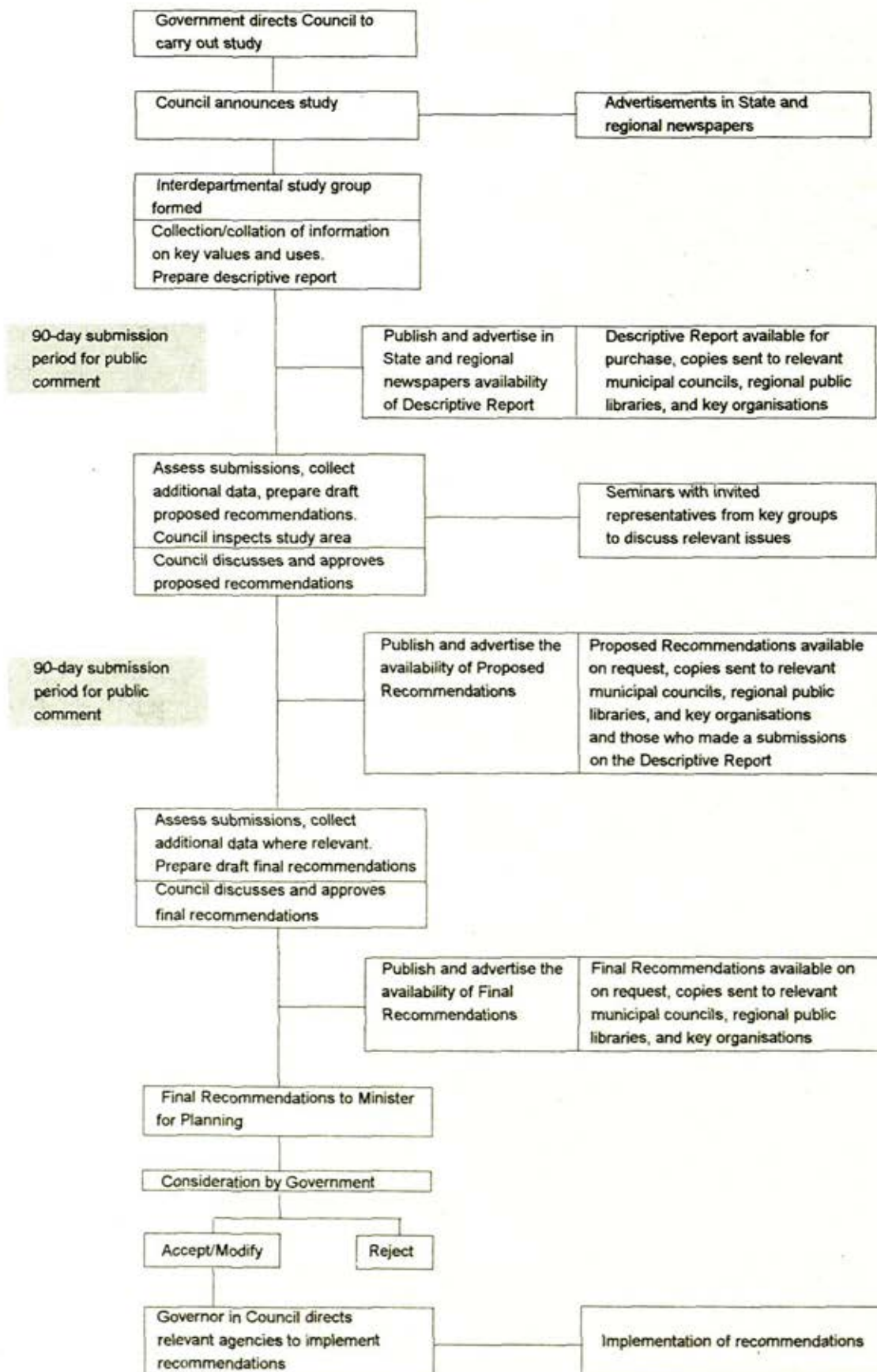
Investigation process for the review

The investigation process is shown diagrammatically in Figure 1.

Notices showing the boundary of the Melbourne Area, District 2, Review study area and advising that an investigation was to be carried out were published in the Victorian Government Gazette on 27 May 1987, and in local and other Victorian newspapers in May 1987. The descriptive resources report was published in August 1991.

The resources report described the physical and biological attributes of the study area,

Figure 1: INVESTIGATION PROCESS



including an assessment of various natural resources; present public land uses; alternative forms of land use and an assessment of the hazards and conflicts associated with specific uses; and a discussion of the major land use issues in the study area. The report provided a factual basis upon which members of the community could base their submissions to the Council.

A wide range of media organisations, libraries, parliamentarians, municipal councils, State government departments, and interested groups was notified of the availability of the report, with many also receiving a complimentary copy. Copies were made available for viewing and purchase in a number of city and country locations. A brochure describing the report was also prepared and widely distributed.

Submissions were sought for a period of 90 days following the publication of the report. In addition, formal briefings and discussions were held with relevant municipal councils as well as with major industry, recreation, and conservation groups. A general invitation was made for any person to contact the Council.

Prior to the formulation of its proposed recommendations, Council sought additional resource information, undertook several inspections in the area to gain first hand information on the range of values and potential conflicts, obtained the detailed comments of public land managers, and considered an independently prepared social and economic assessment.

These Proposed Recommendations are published to enable public comment to take place. Submissions are now invited and these will be forwarded to all Council members for their consideration. Comments and issues raised during meetings with individuals and groups will also be made available to Council members.

These proposed recommendations are the second stage of the process followed by the Council in accordance with the *Land Conservation Act 1970*. The next stage will be the final recommendations which will be presented to the Minister for Planning for consideration by the Government. This will occur in late 1993.

The recommendations in this report apply solely to public land within Council's jurisdiction - that is, public land outside cities

and rural cities. Council is not empowered to make recommendations for private land.

Public land use categories

Council's recommendations identify land use categories covering the following matters:

- * they specify the purpose of the category
- * they nominate the suitable uses for that category
- * they list the inappropriate uses that are not permitted in that particular category
- * they may include policies which explain or interpret the basic purposes of the category
- * they may refer to principles and/or guidelines to be put into effect in more detailed management plans or for site-specific proposals
- * they specify the form of reservation

The Council has, in the past, used some 50 public land use categories to identify and distinguish between different recommended uses. Some concern has been expressed in the community that this large number of categories causes confusion. Public land managers have commented that the current administrative process for reservation is very cumbersome and time consuming and that the public confusion makes management more difficult.

These concerns were discussed in the Council's Statewide Assessment of Public Land Use report in 1988.

Following review of the nature and intent of the land use categories previously employed, the Council has adopted a system of 19 principal categories. This has been achieved by simplifying the previous categories, amalgamating the wording of the recommendations to apply generally to all areas covered by each chapter, but adding references to specific characteristics and uses which provide sub-divisions within the broader category. In Chapter G - Natural Features Reserves, for instance, a general recommendation applies to the whole category, but particular recommendations apply to specific elements of the category, such as streamside areas, natural and scenic features, and bushland.

This approach retains continuity with the former recommendation wording for distinct reserve types. However, the reservation process will be simplified, as areas will be reserved according to the title of the chapter.

Principles adopted in the development of proposed recommendations

In formulating its proposed recommendations, the Council, as in past investigations, established a set of principles to guide its discussions and against which it could evaluate the range of information on land use issues in the Melbourne Area, District 2. The Council also established a systematic procedure to arrive at the proposed recommendations. This is described below.

The principles established by the Council are that:

- * The conservation reserve system in Victoria should contain adequate representation of the major land systems, vegetation communities and faunal habitats in the State.
- * The long-term conservation of significant, rare, endangered, or notable species should be provided for, although not necessarily by including the entire range or habitat of each within the conservation reserve system.
- * All public land in the study area is to be reviewed and the values already included in the Statewide system of conservation reserves are to be taken into account when consideration is being given to any additional reserves.
- * In view of the critical ecological importance of the older-aged ash forests that originated prior to 1900, the Council believes that no such forests in the Central Highlands should be harvested and, where appropriate, they should be permanently reserved. However, as the Australian Heritage Commission (AHC) has commenced a study of the Central Highlands, which will include a detailed assessment by the Department of Conservation and Natural Resources of the extent and condition of the older-aged forests, the Council has deferred further consideration of this policy pending the outcome of the work for the AHC.
- * The park system should provide for a range of recreational activities, although not all should necessarily be provided in every park or throughout the one park. Land managers must continue to zone parks to protect important conservation and other values and to avoid or minimise the impact of incompatible uses, both on park values and on user groups.
- * Harvesting of forest products should be permitted in State forest under management prescriptions to prevent *ad hoc* variations to operations. The sustainable levels of output should be specified in legislation in order to offer a secure future to industry.
- * Land designated as State forest has significant water production, landscape, historical and conservation values. Many rare plants are found in State forest and, considering it occupies about half of all public land, it is of major significance as faunal habitat. In addition, State forest provides a range of products required by the community, the most significant being sawn timber and pulpwood for paper production. State forest areas also provide important recreation opportunities, some of which may not be appropriate in parks. The Council considers that provision for the range of uses mentioned above is an appropriate function of State forest.
- * The concept of multiple use of all public land espoused by some community groups and organisations does not provide adequate protection of the significant values that have been identified. It is therefore considered necessary to establish a conservation reserve system to protect significant values as well as designate other areas where some activities and some values may be mutually incompatible.
- * While it is not the role of the Council to predict the nature of the sawn timber and pulpwood markets, the Council does have a responsibility to make recommendations to the government on the balanced use of land, including the wise use of resources obtained from it.
- * In accordance with the *Land Conservation Act 1970*, the social and economic implications of any new land use recommendations that the Council make must be assessed and taken into account.

New information

The Council is aware that not all needs for the use of public land can be foreseen, and that the value of environmental resources will change as exploration, research, and technology

progress. For these reasons, the Council believes that periodic reviews of public land use in the State are desirable, and it must be expected that areas will be re-allocated or adapted to meet changed demands.

Since the publication of the Council's final recommendations in 1977, considerable new information about the Melbourne Area has been collected. This has generated a number of issues about the way that public land in the region should be used. The new information is described below. The Council has taken the view that it would not automatically review public land use in a particular area. Rather, it will review only when a clear case exists, for example, a change in resources required by the community, or if a substantial body of new information becomes available.

Flora and fauna

Previous surveys of the natural resources of the study area have, in most cases, been regional or site-specific and, as a result, the available information covered only part of the area.

From the outset of this review, the Council recognised that it required a comprehensive study of the vegetation and fauna on public land, to provide an objective base for future land-use decisions.

The Flora and Fauna Survey Group of the former Department of Conservation and Environment undertook a synthesis of data that had been gathered during the range of regional and localised studies conducted since the Council's report in 1979. Additional information was gathered in the course of the study, particularly for the northern areas where information was sparse.

Aerial photograph interpretation and field checking were undertaken and combined with other vegetation surveys to determine the nature and location of the plant communities on public land in the study area and to prepare a floristic vegetation map of the region.

Information from other studies has been integrated with that compiled by the Department of Conservation and Environment.

The Wildlife Branch of the Department also undertook extensive field surveys of the fauna of the region and collated existing information. The results of many of the earlier surveys have been entered on the Atlas of Victorian Wildlife. That data-base enabled assessment of

the distribution, abundance, and conservation status of the fauna of the study area. The habitat of most species of native fauna is strongly vegetation-dependent, and the broad plant communities identified in the flora survey were used to describe the major faunal habitats.

Approximately 2122 species of plants have been recorded for the study area, 1553 of which are endemic. Of these, some 89 are regarded as rare and threatened and a further 12 have not been recorded since 1950 and are now presumed to be extinct in the study area.

More than 35 distinct floristic communities have been described. Of these, one is considered to be rare, three vulnerable, and nine regionally or locally depleted.

The Council considers that the reserve system should (as far as possible) include adequate representation of all major plant communities. This has been important in consideration of the additional areas proposed for parks and other nature conservation reserves.

The protection of native fauna depends on the availability and protection of suitable habitat. The study area includes a range of habitats for native animals and supports a number of significant faunal assemblages as well as rare or notable species. Some 471 species of native vertebrates are currently known for the area and these comprise 66 mammals, 320 birds, 19 fresh-water fish, 44 reptiles, and 22 amphibians. A further 35 vertebrate species are introduced.

Land systems

Land systems identified in various studies across the State have recently been brought under a standardised labelling code such that land with similar characteristics is included in the same system irrespective of where it occurs in Victoria. This was not the case previously.

Some 780 land systems have been identified for Victoria, 100 of which occur in Melbourne Area, District 2.

The Council recognises that it is not possible to represent all land systems in reserves. The more extensive ones should be represented, however, where suitable areas exist on public land, as well as smaller ones where these have important land or land-form characteristics.

For the purposes of the Council's 1988 Statewide Assessment of Public Land Use, a

land system was considered to be adequately represented if at least 10% of its estimated total area in the State fell within conservation reserves. On that basis, 40 of the 100 land systems within the study area are considered to be adequately reserved. Many of the remainder are very small or have little or no representation on public land, although some are represented to a small degree in nature conservation reserves.

Other information

The Council commissioned several other studies relating to the study area, covering the identification of sites of historical significance, and Aboriginal history and associations with public land. Although unpublished, the reports of these studies are available for inspection at the Council's office.

During the preparation of the proposed recommendations, the Council engaged Henshall Hansen and Associates in conjunction with Read Sturgess and Associates to prepare a social and economic evaluation of the Central Highlands (Stage 1) and to assess the implications of the proposed recommendations for a range of uses and values (Stage 2). The reports from these studies are also available for inspection.

Issues raised in submissions

Following publication of the Descriptive Report, Council received 1425 submissions and letters, each providing information, opinions or comment. All were considered by Council prior to the preparation of these proposed recommendations. They have not, however, been treated as if they were a poll or referendum.

Submissions were received from a cross-section of the community. A diverse range of individuals was represented, as was a wide range of interest groups and organisations, as well as many municipal and State government bodies. A large number of submissions was from outside the Melbourne metropolitan area.

Table 1 provides a summary of the source and type of the submissions. A complete list of all those who made submissions is provided in Appendix I.

All submissions received by the Council are also available for public inspection at the Council's office, 1st Floor, 477 Collins Street, Melbourne.

Table 1
SOURCE AND TYPE OF SUBMISSIONS

	Number of submissions
Number of submissions:	
Number of submissions	1298
Number of letters received after closing date	127
Total number received	1425
Submission type:	
Standard response [see (a) below]	1223
Other	202
Place of origin:	
Melbourne	272
Country	1144
Interstate	7
Not known	2
Type of group making submission:	
Government department	12
Local municipality	17
Individual	1330
Interest group [see (b) below]	66
(a) Source of standard submission:	
VNPA	28
Marbut Gunnensen mills	94
Forest Protection Society	1084
Rainforest Group	6
Boomers reserve group	11
(b) Interest group breakdown:	
Academic	2
Conservation	20
Industry	22
Recreation	14
Commercial/business	4
Community	4

Note: The table includes letters received after the closing date for submissions.

The content of any submission marked by the author as 'confidential' would be made available for public inspection under the *Freedom of Information Act 1982*, but only after removal of any information that would identify authorship.

Council appreciates the significant time and effort put into the preparation of the submissions.

Submissions provided information on the values of specific areas, suggested areas to be added to the parks and reserves system, described the importance of the timber and other industries, and raised a range of issues

affecting the study area. Opinions as to the future land use of particular areas were often conflicting.

The differing views raised in the submissions are summarised in the next section. Table 2 provides an overview of the issues raised.

Table 2

ISSUES RAISED IN FIRST SUBMISSIONS

Issues raised	Number commenting		
	Comment only	Information	Total
Comment on report	10	19	29
Leadbeater's possum	62	9	71
Rainforest	46	9	55
Old-growth forests	49	7	56
Flora and fauna	38	14	52
Timber	736	28	764
Water	49	20	69
Ski resorts	11	2	13
Deer hunting	296	5	301
Parks	83	17	100
Coastal	5	17	22
Recreation	1009	13	1022
Conservation - general	16	5	21
Other subjects	7	48	53
Total	2417	213	2630

Note: Most submissions raised several issues.

Outline of issues raised

The inclusion of issues in the following outline does not necessarily imply Council endorsement or rejection of the opinions expressed. Council is also aware that some statements made in submissions are factually incorrect.

General comments

A number of submissions provided detailed comment on the Descriptive Report and corrected errors or updated information. These included: the Lilydale to Warburton rail line is not a popular walking track as part is still leased for grazing; population growth in the Upper Yarra Valley and Dandenong Ranges area is slowing down; new data about water supply arrangements; and concern at the lack of comment on the fishing industry.

More general comments noted the need to take into account the population growth in the south-east and Plenty Valley urban corridors; the limited employment opportunities in parts of the study area especially in the upper Yarra corridor and the Latrobe valley - and the role that the use of natural resources in an environmentally sensitive manner could assist

in creating and/or maintaining jobs. Some noted the confusion between Council's 1977 recommendations, those which were accepted by Government, and existing land uses, and expressed concern about the number of the original recommendations that had not been implemented.

Nature conservation

A wide range of comment was made on the nature conservation values of the study area. Some focussed on the values of the forested lands of the Central Highlands and the need for the conservation of representative samples of plant and animal communities; others stressed the importance of remnant bush for bird habitat and its contribution to farm productivity, and the wider importance of hollows in remnant roadside vegetation.

Leadbeater's possum, sooty owl, spotted tree frog, and helmeted honeyeater were generally acknowledged to be of special significance. Protection of the habitat of hollow-dependant species such as the first two species mentioned above and the yellow-tailed black cockatoo was of concern as was the protection of the tiger quoll.

Less frequent reference was made to significant flora, although a range of opinion on the needs of tall astelia, its fire sensitivity and its response to timber harvesting practices and siltation, was offered. It was also noted, however, that 15 plant species of the area are listed or nominated under the *Flora and Fauna Guarantee Act 1988* - including the locally common but endemic tree geebung and that two plant communities were listed - cool temperate rainforest and red gum swamp. The importance of remnant areas of coastal heath was also raised.

Leadbeater's possum

Support for some form of protection for this species was general - most commonly through a balance of reserves, management zoning and prescriptions. Some suggested that no additional protection was required, whereas others thought that its protection must take precedence over timber utilisation - given that its whole population was within the Central Highlands. There was suggestion that active management of the possum's habitat would be required even if it was included in reserves. Others commented that the possum was only one of a number of important species and that other arboreal mammals such as bats should

also be protected. Some felt that if the needs of Leadbeater's possum were met, then the needs of other hollow-dependant fauna would also be met. Some of the comments were directed towards the Department of Conservation and Natural Resources' 'Draft Management Strategies for the Conservation of Leadbeater's Possum in Victoria'.

Rainforest

The need to protect rainforest was generally acknowledged and a range of suggestions was made for its management and protection. Some suggested that full protection of whole sub-catchments in which rainforest occurs was required. Others suggested that prescribed or enhanced river buffers were sufficient or suggested buffer widths ranging from the existing 20 and 40 metres, to 70 metres (being about equivalent to tree height) or 100 metres or more. Fire management was raised as a key issue, as was the need for consistent definitions of 'rainforest'. Some also supported a special investigation by the Council into rainforest.

Old-growth forest

Definitions of old-growth forest were offered, and discussion presented about the need or otherwise for its protection by specific reserves or by creating buffers (up to 100 metres was suggested). The importance of these forests, especially in providing habitat for hollow-dependant fauna, was emphasised.

Alpine environments

Some submissions highlighted the sensitivity and importance of alpine and sub-alpine environments. Specific alpine areas mentioned included Lake Mountain (especially its snow gum woodlands pre-dating the 1939 fires - such as at Echo Flat), the Torbreck and Federation (Mount Bullfight) Ranges, and smaller areas such as at Mounts Toorongo and Singleton.

Other nature conservation issues

Sites considered to have special nature conservation values included the heathy woodlands on an area of uncommitted Crown land at Lang Lang, remnant grassy woodland on an isolated block at Tyabb, Boomers Reserve at Eltham, French Island's orchid flora and sea eagles, the wetlands of McHaffies Lagoon on Phillip Island, orchids and birds of the Wonthaggi heathlands, and the diversity of birds and mammals (including bats) at One Tree Hill in the Christmas Hills. Wildlife

corridors up to two hundred metres wide through forests were suggested.

Some submissions raised fire management as an issue and the impact of successive fires was discussed (the replacement by wattle of the former ash forest on Lake Mountain and in the Bunyip River headwaters was noted). Possible advantages and disadvantages of fuel reduction burning were raised and the need for additional research on the use of fuel reduction burning was suggested.

There was a suggestion that research was needed into the impact, if any, of deer on other species and the environment. It was also suggested that grazing should be removed from the coastal reserves at Pyramid Rock and Kilcunda, and that it should be phased out from water frontages.

Recreation

Comment on recreational use generally focussed on support for particular forms of activity, in most cases across the whole of the study area. Some advocated multiple-use of specific areas, such as Mount Disappointment, or of all areas.

Hunting

A number of submissions advocated that additional areas should be provided for deer hunting, both by stalking and scent-trailing hounds, as the study area is generally popular for hunting, has good resource, and to redress the imbalance arising from recent restrictions on the areas previously available for hunting.

Some hunters sought access into presently restricted areas such as the water-supply catchments controlled by Melbourne Water; to a number of existing national and State parks - such as the Baw Baw National Park (especially the east end), and the French Island, Moondarra and Eildon State Parks, as well as the Kinglake park (especially the northern section) and parts of the Cathedral Range and Bunyip State Parks; to Lake Mountain, any new parks, and to the Central Highlands Sanctuary (which is mostly State forest). Some sought permission to shoot introduced predators in parks (while otherwise hunting). The use of scent-trailing hounds was advocated for all State forest (and the Moondarra State park). Others considered that there should be no hunting in any park or conservation reserve.

Recreational driving

It was indicated that the study area provided good opportunities for recreational driving - particularly for four-wheel-driving, being both close to a large population centre and well serviced by roads and tracks. The area is also used regularly for organised trips and rallies using both cars and motor bikes.

Some concern was expressed about the impact of recreational use of some forest roads and some noted that four-wheel-drive groups assisted managers in a variety of ways. There was concern that too many tracks were being closed; others, on the other hand, supported road closures. Some suggested that trail bike noise was generally not a problem as their usage was dispersed. There appeared general agreement that there was a need for both more education concerning recreational driving and enforcement of regulations.

Mount Disappointment, the Stockmans Reward - Mount Terrible area, the Warburton - Powelltown area, and the Big and Aberfeldy River valleys were mentioned as destinations of particular interest. The areas receiving heaviest usage by four-wheel-drive vehicles were the Narbethong, Warburton - Powelltown, Gembrook, and Neerim forests.

Walking tracks

A number of submissions raised specific proposals for formal walking tracks. These include proposals to establish tracks along the coastline west of Pyramid Rock (on Phillip Island), along the O'Shannassy aqueduct, to re-route the Upper Yarra track along its original route *via* Yarra Falls, a route based on the expedition of Hume and Hovell, and the provision of increased walking opportunities in the Upper Yarra, Silver and Wallaby Creek water supply catchments. An increase to 100 metres of the buffer along the Alpine Walking Track, was also sought.

Fishing

Fishing was considered to be a major recreational activity in the study area, with Western Port being the most important locality. Support was expressed for exclusion of boats within 100 metres of roost sites of wading birds. It was noted that few streams in the study area are stocked with trout and that fishing here was based on self-sustaining resources.

Horse-riding

Numerous areas are used by horse riding groups throughout the study area, including (and contrary to the comment made in the Descriptive Report) Bunyip State park. Concern was raised about timber harvesting adjacent to the Bicentennial National Trail - at Monda Track, and also about damage to the Greens Bush area (on the Mornington Peninsula) by horse-riders.

Skiing

Cross-country skiing at Lake Mountain was generally supported, although the need to place greater emphasis on protection of nature conservation values was raised. It was noted that this area had the greatest recorded growth in visitation of all Victoria's alpine resorts (over 200,000 visitors a season) placing it amongst the World's most popular cross-country skier day destinations. A suggestion was made that some of the resort's revenue be diverted into nature conservation works and provision of summer walking tracks. Use of the Baw Baw resort has remained constant.

The Alpine Resorts Commission stressed the need for security of tenure (including multi-year licences) over meaningful resort areas, and identified possible additions to the Mount Baw Baw Resort and extensions to the Lake Mountain Resort.

Other recreational activities

Submissions outlined the general use of much of the area for fossicking for gold and gem stones. The reduction in value of the Thomson River for canoeing was of concern as was the possibility of losing access to the Big River, because of water storage developments. One submission noted the importance of the area for commercial recreation activities, while another advocated the integration of commercial facilities with the provision of public land recreation services.

Timber

A wide range of comment and information was provided about the timber industry dependent on the Central Highlands. The importance of the area for the Victorian hardwood timber industry was stressed as were its key role in providing for regional employment, its contribution to self sufficiency in timber products, and the point that the study area contains 67% of Victoria's high quality ash

resource. It was also noted that forest industries are an important part of the social fabric of the communities around the Central Highlands - providing stability and employment.

While some groups suggested that the prospects for a native forest based industry were limited, the industry itself believes that it has a good future and has competitive advantages, that it meets environmental guidelines, and that international markets are now becoming interested in Victorian ash timbers. It was also noted that the uniform stands of post-1939 ash confer advantages for harvesting normally only obtained from plantations. Hardwood plantations were advocated by some to replace the harvesting of native forest, whereas others considered them unlikely to be economic; did not support them while there was a valuable and economic native forest resource available; and indicated practical problems with establishing ash eucalypt plantations outside the natural range of the species. Australian Paper Manufacturers (APM) indicated that it currently plants some 1200 ha of hardwood plantation a year.

It was noted that calculation of the sustainable levels of timber yield needed to take account of provisions for tall astelia and Leadbeater's possum. It was stated that, even if sustainable yield legislation is altered, the government would still have to honour its current commitments, and that, even though the gross area recommended in 1977 to be available for timber harvesting has not changed, application of the Code of Forest Practice and other restrictions (such as providing for the protection of specific values) has meant that the actual area available for timber production has diminished. The conclusion made was that there is no room for further reduction in area; the areas presently designated as hardwood production should remain so.

It was indicated by some that the enormous area of post-1939 fire regrowth of the Central Highlands provided the opportunity for increased yields to replace the reduction of current output to sustainable yields in other parts of the State.

There was also some confusion about the application of sustainable yield policy and codes of practice. Concern was expressed that trees younger than the deemed 80-year rotation age are being harvested (leading to the production of a high proportion of pulpwood), and that plans to harvest a high proportion of

the Thomson catchment each year appeared to conflict with the limits prescribed on the area that could be harvested annually in water supply catchments.

Some people suggested that it was hard to understand exactly what sawlog driven meant (as more cubic metres of pulpwood were produced than were of sawlog). There were suggestions that there should be better supervision of policies and an improvement in forest management to enhance water yield and quality in multi-use water supply catchments. An increase to 100-year logging rotations was suggested for the Central Highlands ash forests.

A range of views on streamside buffers was also put - they were considered variously to be either adequate or inadequate and increases (to 100 to 150 metres or more) were suggested; concern was expressed on how the buffers were measured.

The importance of the pulpwood resource was stressed in some submissions. It was suggested that woodchips from the Central Highlands could contribute to a proposed East Gippsland pulp and paper mill, or to an expansion of the Maryvale paper mill. It was noted that APM has undertaken integrated (sawlog and pulpwood) operations since 1949 and is now thinning some of the resultant regeneration, and that another company collects waste wood from a number of mills for chipping.

Some advocated the use of timber for construction material, rather than materials that utilised large amounts of fossil fuel, in order to reduce greenhouse gases. The conversion of wood into products was considered a low energy process; the resultant products are biodegradable and recyclable, and it was maintained that the forest itself was renewable.

Other comments included the observation that 43% of sawn timber already comes from softwood plantations; that the Central Highlands has a long history of logging (having produced hardwood products since the mid 1800s); the importance of the Delatite Arm (Lake Eildon) softwood plantations; that logging was considered to conflict with water production in the Thomson catchment; that Council's recommendations should be held over until a number of important Commonwealth government studies and enquires had been completed; that harvesting should not be permitted around Warburton; and

that fire salvage logging should be permitted in all land use categories.

A number of companies also provided details of their operations. These indicated that several mills are already fully committed to value adding and that a large number of employees is dependant on the industries' continued access to the Central Highlands timber resource.

Water

Submissions about water issues often referred to the compatibility or otherwise of timber harvesting and water production, and on the need to ensure the highest possible water quality, and high yield, of streams supplying water for domestic uses and indeed all streams.

It was suggested that all steams and water courses should have buffers that will ensure improvement in water quality and that the buffers be strictly enforced. It was also suggested that all water supply catchments should be protected from major disturbance. Others suggested that thinning operations in water supply catchments, or the exclusion of timber harvesting from them, could provide increased water yields.

The policy of Melbourne Water to not log the catchments was noted as providing significant nature conservation benefits as well as water production benefits, and that authority was suggested by some as the appropriate manager of water frontages. Concern was expressed about a possible water storage on the Acheron River, the need to tap the Goulburn River for Melbourne's water needs, and the water quality problems of the Tarago Reservoir.

A range of other issues was raised: land was sought for effluent disposal at Marysville; the role and power of State Environment Protection Policies in protecting water quality were indicated; and the need to evaluate the impact of fuel reduction burning practices on water quality was suggested. The need for drainage filtering and flood detention works in urban areas (especially the south-eastern growth corridor) was also raised.

The limited emphasis given to groundwater in the Descriptive Report was raised as a concern.

Marine and coastal issues

Considerable comment focussed on the desirability or otherwise of creating new marine reserves or parks, particularly in

Western Port. Other submissions referred to: the need to protect seagrass beds and the high tide roosts of wader birds; the government's commitments to aquaculture; the urgent need to designate disposal sites for dredging spoil; increasing recreational fishing; the operation of committees of management; and the need to rationalise coastal recreational facilities. Information was provided about proposed developments at San Remo and at Heritage Cove (south of Hastings) and the regular avifauna surveys undertaken by the Bird Observers Club at Western Port.

Subsequent to publication of the Descriptive Report, the Council was asked to undertake an investigation into Victoria's marine and coastal environment. Those issues relating to the marine environment within the Melbourne Area, District 2, will be addressed in Council's Marine and Coastal Investigation (respective correspondents have been advised accordingly).

Proposals for new parks and reserves

A wide range of suggestions was made to create new parks and reserves, to add areas to existing parks, and to provide protection for values identified within specific areas. There was also support for the retention of large areas of State forest in which a wider range of activities could take place. Concern was expressed that the creation of new parks and reserves would reduce the availability of timber resources, that the land managers would not have adequate resources to manage such new reserves, and that there was already adequate representation of flora and fauna in existing reserves, especially if the water supply catchments under the control of Melbourne Water were considered.

A number of groups advocated the creation of a single large national park that would link existing parks with the water supply catchment system, incorporate the catchment to Lake Thomson, and extend to Mounts Torbreck and Bullfight. A number of variations on this theme was also tendered.

Some suggested upgrading the status of parks - such as the creation of a French Island National Park. Some were concerned that Council's recommendations of 1977 had not been implemented and sought the creation of the Lake Mountain State Park, the addition of Stockyard Point to the French Island park, and the inclusion of the Upper Yarra multi-purpose park in a park system.

Extensions were sought to the Baw Baw National Park to include adjoining rainforest and old-growth forest areas and nearby areas of historic interest. Additions, perhaps by way of land exchange, were suggested to the Cathedral Range park and a number of submissions discussed potential reserves in the marine areas.

Some submissions suggested that education areas be incorporated into parks, while others expressed concern that they should be retained - particularly the Castella Education Area.

Numerous areas throughout the study area were considered to warrant protection in some form of nature conservation reserve. These ranged from the south coast of Phillip Island, isolated blocks of remnant vegetation - such as the Tallarook forest and sections of some river frontages, to particular parts of the Central Highlands forests.

A number of submissions referred to the need to protect historic sites. Those suggested as warranting specific protection were at Coopers Creek, the State Coal Mine at Wonthaggi, and the Royston - Rubicon hydro-electric system, as well as gold mining sites and forest industry sites.

Suggestions that disused railway lines be retained in public ownership for linear parks were also received - notably the Tallarook to Yea, Yea to Molesworth, and Lilydale to

Healesville lines. Additional protection was sought for the scenic corridor of the Puffing Billy railway and its proposed extension to Gembrook.

There was concern that there would be confusion between National Estate listings and park proposals and that there was a need to reiterate that public land use is a State responsibility.

Other matters

The submissions covered a wide range of additional matters.

Continued access to stone resources and to areas for mineral exploration, and the encouragement of mining were considered important. Some considered that dredging should be permitted, and others expressed concern that the Melbourne Water water supply catchments might become accessible to holders of Miners Rights.

Apiculturalists considered beekeeping a legitimate use of public land and sought continued access to traditional bee sites. There was support for further study into the potential impacts of bees on nature conservation values.

It was considered that the Council must address the issue of grazing licences along the coastal reserve and the importance of the fishing industry was stressed.

PROPOSED RECOMMENDATIONS

The Council recommends the continued use or establishment of: parks in areas of particular importance for recreation and nature conservation; reference areas and education areas (covering most of the range of land types found in the study area); nature conservation reserves for areas of value for the conservation of representative plant communities and important animal habitat; and natural features reserves and historic and cultural features reserves to protect sites containing particular elements of the natural or cultural landscape. Substantial areas are recommended as State forest which are available for a wide range of uses, but in a way that is consistent with their sustainability over time.

Where demands from competing uses vie for a given area of land, it may not be possible to satisfy them all. Wherever possible, these recommendations attempt to achieve balance in

providing for the present needs of most forms of use while retaining flexibility and the opportunity to adjust to future changes in such needs. They do so by placing as much of the public land as possible under forms of use that do not have a major impact on the natural ecosystem.

Flexibility in planning is essential. Our knowledge of many resources (for example, minerals), the distribution and ecology of plants, and the ecological requirements of native animals is imperfect. There must be many places in Victoria where special values remain unrecognised and for which no special provision can be made in present planning. Furthermore, future needs for resources or environmental protection on public land may require alteration or modification of these recommendations, which are based on the best information currently available.

Table 3 provides a summary of the proposed recommendations in terms of the major forms of land use.

It is important to realise that each primary use has a number of compatible secondary uses. In addition to nominating the best uses for the land, the recommendations indicate what is considered to be the most appropriate form of

tenure for the land and the most appropriate management authority.

In formulating these proposed recommendations the Council has considered all the available information from a wide range of sources and has taken into account the various issues raised above. Information on natural resources in the area was evaluated bearing

Table 3
PROPOSED PUBLIC LAND USE

Land use categories	Area (ha)	Percentage of land in the study area covered by these recommendations	
		All land	Public land
National parks	108 600	6	15
State parks	73 100	4	10
Regional parks	6 550	< 1	< 1
Reference areas	6 420	< 1	< 1
Nature conservation reserves	10 590	< 1	1
Water production	25 600	< 1	3
State forest	475 500	28	64
Historic and cultural features reserves	5470	< 1	< 1
Natural features reserves	5520	< 1	< 1
Alpine resort	420	< 1	< 1
Community use areas	4 140	< 1	< 1
Forest plantations	10 140	< 1	< 1
Earth resources	450	< 1	< 1
Services and utilities	490	< 1	< 1
Land not required for public purposes	500	< 1	< 1

Notes:

1. The study area covers some 1 697 500 ha, of which about 739 800 ha (44%) is public land (source - Geographic Information Systems section, Department of Conservation and Natural Resources; January 1993).
2. Other land uses collectively make up the balance and not all parcels of land in each small-block category have been measured.
3. Numbers are rounded.

in mind the significance of those resources on a State-wide basis.

Representation in the reserve system of land systems and major land types, vegetation communities, fauna and threatened species was considered, as well as the State-wide significance of the Melbourne Area, District 2 with respect to nature conservation, timber production and other uses. In the light of that evaluation, the Council now proposes to extend the existing reserve system in order to incorporate a range of values represented in the study area, bearing in mind the State-wide context.

Under the *Land Conservation Act* 1970, the Council has the responsibility to make recommendations on the use of public land in order to provide for the balanced use of land in Victoria. In making its recommendations, the Council must have regard to both the present and future needs of the people of Victoria in relation to several criteria that emphasise the need to protect significant conservation and recreation values.

Council has also taken the view that it must achieve a balance between these and other needs required by the community from public land from a local, regional, State, and even

national perspective. At the same time, it must also ensure that other public land is available for legitimate uses such as the harvesting of forest produce and mineral extraction.

It has been suggested that the multi-purpose management of public land can provide for the protection of all the significant values that are identified while still allowing commercial use of the natural resources - in other words, that there is no need to create national parks and other conservation reserves.

The concept of national parks is internationally recognised and embraces the notion that representative examples of the major land and vegetation types, together with the outstanding features occurring on public land, should not be subjected to commercial exploitation nor the environmental disturbance associated with such enterprises. These areas should, because of their significance, be afforded the maximum possible protection in legislation.

In national and State parks, the aims of management are to provide recreational and educational opportunities consistent with the preservation and protection of the natural environment, indigenous species, and other conservation values. Development associated with the recreational use of these parks is confined to small areas to minimise disturbance.

However, in State forest, management aims differ and timber production is a major use. The Council supports the continuation of timber production subject to the provisions outlined in Chapter E of these recommendations. Exploration for and extraction of earth resources, grazing, and apiculture are also important uses of State forest, which is managed for a multiplicity of uses.

Protection of natural values is an essential part of the management of most public land and uses must be consistent with the aim of avoiding predictable long-term environmental damage. In some cases, however, decisions often favour one form of use over another and the maintenance of biological diversity and protection of natural values can be reduced when resource utilisation is the primary use.

The Council believes that, in parts of the public land estate, pressures to modify the natural environment should be minimised. Consequently it has adopted the policy of setting aside areas of public land for parks, to

be used in ways that are consistent with nature conservation.

Many people and conservation groups have requested that a large area within the Central Highlands be placed in a major conservation reserve. An important aim of the Council is to maintain the community's high regard for Victoria's conservation reserve system by ensuring it is representative and viable, and contains, in particular, those areas that are outstanding or significant. The areas in the Melbourne Area, District 2, defined by the Council for inclusion in the national park system contain such outstanding and significant biological, scenic, and recreation values, as well as representation of major land systems.

The Council nevertheless recognises that many areas of public land in the study area that are not included in new or existing nature conservation reserves have important conservation values that need to be protected. Most of these are specifically identified in the recommendations for State forest, where protection has been, and will continue to be, provided to such values. Indeed, State forest plays a crucial role in conservation of the State's resources and, considering it occupies about 40% of all public land in Victoria, it is of utmost significance as floral and faunal habitat. The government's emphasis on the protection of other values outside the reserve system is reflected in the aims of the State Conservation Strategy in relation to such areas. These are to:

- * maintain essential ecological processes and life-support systems
- * preserve genetic diversity
- * maintain renewable resources
- * protect and manage natural systems and their diversity for the non-material needs of society.

Public land in the region has special significance with respect to the conservation of Leadbeater's possum, spotted tree frog, brown galaxias, tall astelia, and cool temperate rainforest.

Summary of recommendations

The Council has reaffirmed its previous recommendations concerning the wide range of existing parks and reserves in the study area and has proposed minor additions to some.

Melbourne's main water supply catchments contain probably the best representation of the

wet sclerophyll forests and cool temperate rainforests in the State and include a range of other vegetation communities, high quality faunal habitat, and other nature conservation and cultural values, as well as require continued protection to ensure the provision of high quality water. In recognition of these values, the Council is proposing the establishment of a new national park in the Central Highlands and a substantial addition to the Kinglake National Park which incorporate these catchments.

Lake Mountain is included in the proposed Central Highlands National Park to protect its important conservation values. Council also appreciates that it is an important cross-country ski resort and accordingly has proposed that the Alpine Resorts Commission continue to manage the winter recreation facilities and services of the area.

Public land on Phillip Island contains a wide range of significant natural, cultural and recreational values. To ensure protection of these values and to achieve their integrated management, the Council is proposing that the bulk of public land on the island be incorporated in a new State Park. Proposals for two new regional parks at Kurth Kiln near Gembrook and in the Plenty Valley recognise the importance of public land close to urban centres for recreation in relatively natural environments.

A proposed new reference area adds to the system of reserves across the State specifically set aside to protect unmodified examples of land types as standards for scientific research. A new education area is proposed to complement the range of such areas available for studies of the natural environment.

A number of new flora and fauna and flora reserves are proposed to complement the provisions within parks for the representation and protection of floral and faunal values. Combined, the existing and proposed parks, reference areas, and nature conservation reserves provide for at least a 20% representation within the reserve system of each of the majority of the principal vegetation communities of the study area.

After accounting for the existing and proposed parks and reserves, about 64% of the public land of the study area remains as State forest. Timber makes an important contribution to the local and State economy and Council has recommended that timber production should

continue from State forest subject to protection of environmental values as laid down in the Code of Forest Practices.

In the context of the new land classification system mentioned above, other proposals identify historic and cultural features reserves and natural features reserves to protect specific elements of the cultural and natural landscape, and the designation of areas for community uses, such as for recreation areas and public buildings.

Other recommendations include areas for the protection of water supply, for recreation, education and protection of landscapes and ecosystems along the coast, for a small addition to the Baw Baw Alpine Resort, and for plantations.

Social and economic implications of the proposed recommendations

During the later stages of preparation of these Proposed Recommendations, the Council commissioned the consultants - Henshall Hansen Associates and Read Sturgess and Associates to undertake Stage 2 of their social and economic study of the Central Highlands. The report from this study - "A Social and Economic Impact Assessment of Draft Proposed Recommendations for Land Use in the Central Highlands (Melbourne Area District 2), Victoria" - is available for inspection at the Council's office.

The following summarises the Executive Summary of that report. The consultants note that, in most cases, there is little quantitative information available by which to measure the benefits and costs of the Council's proposals. They have therefore been unable to quantify in monetary terms many of the potential benefits and costs. A copy of a tabulated summary of the benefits and costs prepared by the consultants is provided in Appendix II.

The major benefit from the proposals would be the protection of nature conservation values in the proposed national park and other reserves. The major cost would be the value to the sawmilling industry of the timber resources foregone from those areas of State forest which would be made unavailable.

On the basis that the current sustainable yields of sawlogs from the respective Forest Management Areas would be reduced immediately by a total of about 5100 cu.m per annum, the consultants estimate that the net

loss to the State economy would lie in the range of \$260 000 to \$460 000 per year. The gross ex-mill value (which includes the value of inputs) of the timber production foregone could be up to \$3.3 million per year. In terms of employment, about 22 of the jobs involved in the timber industry to the stage of despatch from the mill door would be displaced. The associated indirect displacement - beyond the mill door - would be an additional 33 jobs.

Changes in the numbers of visitors to an area would affect employment. The consultants note that there would be a possible but unknown increase in employment in the tourist sector if the proposals were implemented. They believe that inclusion of Lake Mountain in the proposed Central Highlands National Park would result in a change in priorities of management and may produce a slower rate of increase in winter visitors than if Lake Mountain remained as an Alpine Resort. On the other hand, depending on the degree to which the area is promoted and facilities provided, the number of visitors may increase during summer.

Both the reduction in employment from loss of timber resources and the possible increase from tourism would be experienced in small towns in the study area.

Council is concerned about the potential flow-on effects of the reduction in availability of sawlog resources in terms of employment, current and future investment, and impacts on some communities in the study area, particularly in the current economic climate. It is also aware of other requirements related to planning and management that may further reduce the availability of timber resources. It is therefore proposing that the current legislated yield of sawlogs from the respective Forest Management Areas be sustained through the current period to 2001, and that reconciliation of the reduced availability of logs be undertaken in the next period when an overall increase in sustainable yield was expected. This approach will still permit an increase in yield for the next period, although probably not as large as previously calculated; a factor which depends not only on Council's recommendations but also on other processes outside the Council process as well as re-assessment of the resource.

Public land and the Aboriginal people

The Aboriginal people are the first Australians and as such make a special contribution to

Australian culture and society. They have lived in south-eastern Australia for more than 30 000 years and have strong emotional and cultural ties to the land. Aboriginal groups believe certain areas (such as sacred sites and ceremonial grounds) have a particular significance. Other sites that provide valuable evidence of occupation and Aboriginal culture are also regarded as highly important.

There is a paucity of information from Aboriginal sources about Aboriginal life and culture in the study area prior to European settlement and most information derives from historical records dating from 1835.

The study area was once occupied by several tribes: the *Bunurong*, *Woiworung*, and *Taungurong* - and formed the dominant component of the 'Kulin nation'. A small portion of the eastern part of the study area was probably occupied by the *Kurnai* from Gippsland.

The Kulin tribes traditionally held joint gatherings on the banks of the Yarra river and elsewhere. Until the advent of European settlement, they lived mostly by gathering food and hunting, and relocated their camps as they moved across the landscape. The evidence to date indicates that occupation was centred on the river systems and coasts although it is also known that they travelled to the mountains.

Relative to most of Australia, the study area has been well studied for pre-contact sites, especially along the coast. However, further studies are needed to prepare a comprehensive register of sites and to provide an understanding, from inland sites, of human occupation older than 6000 years. The Council believes that such studies should be carried out in association with surveys (such as for flora and fauna) conducted by the Department of Conservation and Natural Resources.

Archaeological sites, which provide evidence of early Aboriginal occupation, are important parts of Australia's cultural heritage. Such sites include middens, stone tool scatters, scarred trees, rock art sites, ceremonial stone arrangements, stone quarries, and camp sites.

Damage or disturbance (whether deliberate or inadvertent) to archaeological relics and sites is prohibited without a permit under the Victorian *Archaeological and Aboriginal Relics Preservation Act 1984*.

Under Commonwealth legislation - the *Aboriginal and Torres Strait Islander Act 1984* - Aboriginal communities are empowered as decision-makers in relation to the protection of Aboriginal places and objects. In accordance with this Act, land management works or activities that have the potential to affect Aboriginal archaeological sites, places, or objects should only be carried out with the permission of the relevant Aboriginal community.

For the Melbourne Area, District 2, these communities are the Dandenong and District, the Healesville and District, and the Morwell Aboriginal Co-operatives. The majority of members of these co-operatives are descendants of the tribes inhabiting the region at the time of European contact. The co-operatives provide services for the health, social, housing, and cultural needs of Aborigines within approximately 50-km radius of their headquarters.

The June 1992 'Mabo' judgement of the High Court of Australia is a significant development with respect to land issues. In this judgement, the High Court overturned the legal doctrine of '*terra nullius*', which assumed that Australia was unoccupied at the time of European settlement, and expressed the view that Aboriginal peoples held a common law property right over land and sea in accordance with the custom and traditional use of those areas. It also decided that such 'native title' continues to exist where land has not been alienated by the Crown and if continuous traditional association can be demonstrated. The full implications of this judgement are uncertain and are likely to be clarified in the next few years.

Where Aboriginal people have maintained their association with the land, their long history of dependence on the natural environment for food, fibre, and shelter has provided them with a vast knowledge of the land and its plants and animals - and of sustainable land use. Where knowledge of these practices has survived, there is the opportunity for the integration of such knowledge into present land management practices.

In recent years, government departments have enhanced opportunities for the employment of Aboriginal people in government programs. Prospects for additional employment exist; particularly in connection with the management of public lands and the establishment and staffing of interpretative facilities.

It should be noted that involvement of the Aboriginal community in the identification, protection and management of sites of particular cultural significance is required under the Commonwealth legislating. Council suggests that the Aboriginal community should be involved in the preparation of management plans for public land.

It is also important that a detailed oral history of Aboriginal culture of the area be prepared as soon as possible, before valuable information is lost forever.

Melbourne Parks and Waterways

In January 1993, the government established "Melbourne Parks and Waterways" - a separate enterprise encompassing the parks, waterways and environmental operations of Melbourne Water.

A new inter-agency "Parks and Waterways Program" replaces but maintains the fundamental direction of the Open Space 2000 program which was launched in 1991. That program aimed, over 10 years, to build upon and improve Melbourne's existing open space network with the major focus being the creation of open space links from Port Phillip Bay across Melbourne to the surrounding ranges. It involved a grant scheme for community projects.

The original program encompassed a number of the municipalities within the Melbourne Area, District 2, together with those in metropolitan Melbourne outside Council's study area. Council maintained a liaison with the task group preparing the strategy.

The priorities for the Parks and Waterways Program, which has joined with Greening Australia, Victoria in the coordination of providing community grants, are to:

- * create linkages between parks and reserves
- * protect, improve and restore flora and fauna habitats or cultural sites of national or State significance
- * improve creeks, rivers and foreshores.

The program is supported by a secretariat in Melbourne Parks and Waterways and overseen by a Ministerial Council which will have a comprehensive membership drawn from the community.

Public land (as defined in the *Land Conservation Act 1970*) is an important component of the proposed linked system of reserves. However, open space areas also include municipal freehold land and Metropolitan Parks (now managed by Melbourne Parks and Waterways), and some strategic private freehold land may also be considered as proposed public open space.

Council's recommendations for Crown land around Port Phillip Bay and Western Port, on Mornington Peninsula, along water frontages, in the Dandenongs and, in particular, the proposed Warrandyte - Kinglake habitat link, are all complementary to the objectives of a linked system of parks and reserves.

Australian Heritage Commission

A statutory authority, the Australian Heritage Commission (AHC) was established under the *Australian Heritage Commission Act 1975* as the Commonwealth government's policy, advisory, and administrative body responsible for the National Estate. The National Estate is defined in the legislation as 'those places, being components of the natural environment of Australia, or the cultural environment of Australia, that have aesthetic, historic, scientific or social significance or other special value for future generations, as well as for the present community'. Australia's National Estate is thus a wide-ranging concept that covers a variety of features.

Register of National Estate

One of the Commission's major responsibilities is to prepare and maintain a Register of National Estate places. The Register is thus an inventory of the significant parts of the cultural and natural environment of Australia.

Compilation of a comprehensive Register will take many years and will be a continuing process, but all registrations will have the same status irrespective of the time of their entry. There is no hierarchy between different categories of places in the Register.

Any member of the public is entitled to nominate a place for the register, and places may be nominated at any time. Nominated places are entered onto a preliminary list and put on public notice. Any individual or organisation may lodge in writing to the Commission an objection to the proposed registration of a place. The minimum time for public comment is 3 months from the date of

public notice. Prior to being registered, all places are professionally assessed in terms of their National Estate values.

More recently the AHC has undertaken, in conjunction with State governments, regional based assessments of National Estate values. This approach allows for a comprehensive consideration of values and provides a better context for assessment. This approach has been undertaken in a recent study in south-west Western Australia and similar studies are underway covering the Cape York peninsula and East Gippsland with another proposed within Tasmania.

The Central Highlands is a similar region of interest to the AHC. A proposal was put to the Commonwealth government for the coordination of Council's study of the Melbourne Area, District 2 with the AHC's intended consideration of areas of potential heritage value in the Central Highlands. This would have the advantages of allowing the Council and the AHC to share resource information, permitting government decisions on land use in the area to have the input of both processes, and alleviating community uncertainty regarding future land use.

It is stressed, however, that the Council's process will remain independent of any Heritage Commission process. The Council will ensure that areas recommended for protection or resource use meet its own established criteria. The Council's recommendations also take into account consideration of socio-economic factors in determining the balanced use of land - this is not a requirement of the AHC process.

Effect of registration

Registration of a place formally recognises its National Estate values and in turn imposes some constraints on the actions of Commonwealth Ministers and authorities. The Act provides that Commonwealth Ministers and their agencies must not take any action that would adversely affect any place in the Register - unless there is no feasible or prudent alternative, unless all action is taken to minimise damage where no such alternative exists, and unless the Commission is informed and given time to comment.

The Commission, under its Act, has no power with respect to the action that might be taken by State governments, local governments, private land-owners, or institutions, nor does it

imply any particular attitude by the Commission or the Commonwealth to the ownership, management, or use of a place listed in the Register. Registration of a natural area does not, for example, mean that the Commission or the Commonwealth holds a view that the area should be a national park or public reserve. Rather, it means that the place has been recognised as an important component of the National Estate. The significance of the area may have been retained or enhanced because of, or in spite of, past management. Registration, therefore, should not be interpreted as endorsing or condemning any particular management practice or regime.

Traditional uses such as timber harvesting and

silviculture, farming, fishing, recreation, and water regulation would be permitted to continue, as these have influenced the landscape as it presently exists and have played a role in the development of Australia.

In essence the Register is an alerting and educational inventory compiled on the single criterion of National Estate significance, which is being developed to be as comprehensive as practicable, and which has implications for protection where actions by the Commonwealth are concerned. It is a list of the nation's heritage resources available to all decision-makers to assist them to make better-informed decisions.

GENERAL RECOMMENDATIONS

Recommendations I and II qualify those in the body of the text.

Council wishes to stress the need for adequate resourcing for management and protection of public land, as it has made its recommendations on the assumption that sufficient staff and finance will be provided for the appropriate management. Unless these resources are provided, Council's recommendations cannot be effectively implemented. However, it must be recognised that most of the public land is managed by the one authority - the Department of Conservation and Natural Resources - regardless of the current or proposed land use category. New resources may only be required if the intensity of management increases as a result of the recommendations.

Council emphasises that pest plants and animals pose problems in the management of public land. Finance and staff are required to research and implement methods of controlling pest species. As with most public land, fire protection and suppression measures may be necessary from time to time. Council therefore recommends:

- I That the authorities responsible for managing and protecting public land and water resources be allocated the resources necessary for the task.

Council expects that, as a result of further study and investigation, additional areas with special values may be identified and new earth resources discovered. In addition, new uses of existing resources may also be discovered.

Present planning cannot specifically provide for the conservation of these values or the utilisation of these resources. Council therefore recommends:

- II That, when significant new discoveries are made relating to land and resources within their administration, government agencies enlist the best advice available on the importance of such discoveries and how they should be managed. Advice from relevant organisations other than government authorities and academic institutions should be sought whenever appropriate.

Recommendations III to VI concern the implementation of recommendations.

Council also recognises that in some cases existing legislation may have to be amended, or new legislation passed, in order to effectively implement the recommendations. It is aware that this may result in a delay, perhaps of several years, before some of its recommendations can be implemented. It is concerned that, where implementation of the recommendations would involve a change of land tenure, identified values could be affected or management efficiency could be reduced during the delay period. Council believes that the government should direct that the intent of the recommendations be followed until they are implemented.

- III That, until the formal procedures for the implementation of those recommendations approved by government are completed,

the present legal status and management responsibilities continue, except that the land be managed in accordance with the approved recommendations.

- IV** That, as the boundaries of many areas have not been precisely surveyed, they be subject to minor modifications, road excisions, easements, and other adjustments that may be necessary.

- V** That in cases where occupation does not agree with title, the Department of Conservation and Natural Resources may at its discretion make adjustments to boundaries of public land when implementing these recommendations.

- VI** That the recommendations in this report do not change the status of roads passing through or abutting public land that are at present declared roads under the *Transport Act* 1983.

A. PARKS

Victoria contains substantial areas of public land that have been retained in a relatively natural state. The number of people using these areas for recreation is increasing and will probably continue to do so. Pressures for the use of public land in ways that would change its condition are also increasing. Council believes that it is essential to reserve now, viable samples of the various land and vegetation types, together with the outstanding natural features, that occur on public land. These areas can best be reserved in a system of parks.

The Central Highlands region retains several large areas that are essentially natural and contain examples of the landscape and flora and fauna relatively undisturbed since European settlement. Such lands are a valuable part of our heritage and must be dedicated for nature conservation and the benefit, education and enjoyment of present and future generations. This principle of land use is a major consideration in determining that areas should be reserved as parks.

A park is defined here as 'an area of land in a natural or semi-natural condition reserved because of its scenery, floral and faunal content, historical interest, or other features, which is used by the public primarily for open-space recreation and education'. This definition encompasses many different types of parks; they vary mainly in size and content and in the types and intensity of uses to which they are subjected. Definitions of different types of parks are needed to clarify the main purposes for which each one is created, and will help planners, managers, and users of parks.

It is necessary to establish the management aims that apply to areas or zones within parks. Among these, the conservation of native flora, fauna and other natural features would be an essential part of national and State park management. This should include the identification and strict protection of significant ecological systems as well as the development and use of techniques (including husbandry techniques and population manipulation) to enable species of particular interest to be studied and special values associated with flora and fauna to be maintained or enhanced.

The location and management of areas zoned for intensive recreation will require special care to prevent damage to the environment.

This publication presents recommendations concerning parks in terms of the uses to which the land should be put. Parks have also been classified into categories.

Park management

Part of the proposed park system described in these recommendations includes co-operative management of adjoining areas by Melbourne Water and the Department of Conservation and Natural Resources. Principles as to how this should be undertaken are set out below in the preamble to the Central Highlands National Park (Recommendation A7).

Council recognises that wildfires, however caused, must be prevented from threatening life, property and natural resources in the State. The measures necessary to control wildfires must be taken in parks as in other areas. In all parks the suppression of fires remains the responsibility of the Department of Conservation and Natural Resources.

Fire-prevention measures such as maintenance of fire-access tracks and protective burning will also be required in those areas of parks that have strategic importance for fire-control.

The particular measures to be taken in individual parks will be incorporated in the protection plans prepared by the Department of Conservation and Natural Resources.

The two organisations that share the duty of fire-prevention in rural Victoria - namely, the Department of Conservation and Natural Resources and the Country Fire Authority - have closely co-ordinated arrangements for mutual co-operation.

The control of vermin and noxious weeds within parks will continue to be the responsibility of the Department of Conservation and Natural Resources, and will be carried out in accordance with plans prepared by the Department.

With sensitive and responsive planning and management, the Council believes, the parks

should be able to cater for a broad spectrum of public recreation activities without prejudicing other major functions - namely, long-term conservation and protection of the area's special natural features.

An essential aim in the reservation of an area as a park is to provide for the enjoyment of the public, and therefore public access will be maintained. Indeed, additional access may be

provided to interesting areas by way of nature trails and walking tracks.

The Council believes that the park system should offer a wide range of recreational uses. There is a place not only for activities such as photography, bird-watching, and nature study, but also for those like scenic driving and touring using the existing tracks as well as the system of formed roads.

NATIONAL PARKS

A national park is defined as:

An extensive area of public land of nation-wide significance because of its outstanding natural features and diverse land types, set aside primarily to provide public enjoyment, education, and inspiration in natural environments.

The conservation of native flora, fauna and other natural features would be an essential part of national park management. Interpretative services would be provided.

Development of facilities would be confined to a very small portion of the park. Activities would largely consist of sightseeing and the observation of natural features. Wilderness zones, which are relatively undisturbed tracts of land used for solitude and wide-ranging forms of recreation, could be designated within a national park.

As well as the recommendation below that applies to all the existing and proposed national parks and their additions, specific recommendations may apply to each of them.

NATIONAL PARKS

Recommendations

A1 - A6 That the areas described below be used to:

- (i) conserve and protect natural ecosystems
 - (ii) protect sites of cultural importance
 - (iii) supply water and protect water catchments and streams
 - (iv) provide opportunities for recreation and education associated with the enjoyment and understanding of natural and cultural environments
- that
- (v) (a) apiculture be permitted on traditionally licensed sites
 - (b) the number of sites be maintained subject to park management requirements
 - (vi) harvesting of forest products not be permitted
 - (vii) grazing by domestic stock not be permitted
 - (viii) exploration for and extraction of earth resources not be permitted
- and that they be included on a schedule to the *National Parks Act 1975*.

Note:

Specific recommendations apply to the proposed Wallaby Creek addition (A3) to the Kinglake National Park; these are set out in full in that section.

EXISTING NATIONAL PARKS

A1: Kinglake National Park

Land at Kinglake was reserved as a national park prior to Council's recommendations in 1977. This designation has been retained although the Council, at that time, recommended that the original area, together with additional parcels of land should be set aside as a State park.

The Council is now proposing further substantial additions of land to the Kinglake park which would then encompass a total area of some 17 500 ha (this includes the portion of the existing park in the study area, that portion of the existing park in the City of Whittlesea, the proposed additions, and the reference areas within the proposed Wallaby Creek addition - which are traditionally set aside as zones within a park).

In the context of the total land area proposed to be included in the park, and the wider representation of land types, plant communities and other values that the additions contribute, the Council now believes that the greater area warrants designation as a national park.

The chief scenic features of the existing park are fern gullies and waterfalls and the panoramic views which can be obtained from a number of vantage points across the cleared lowlands towards Melbourne. The park consists of three large, irregularly shaped parcels of land and a number of smaller ones. It abuts freehold land on most of its boundaries.

Recreational use is high and includes nature study, walking on tracks or through the bush, picnicking, horse-riding, and some camping in designated sites. It is traversed by a number of public roads.

The vegetation types it contains are typical of those of the dry forests of the foothills and southern slopes of the Great Divide. The most common are dry sclerophyll forests, damp sclerophyll and shrubby foothill forests to the north, grading into heathy dry forests in the south. Many of the streams are bordered by riparian forest. The rare plant - creeping grevillea (*Grevillea repens*) - grows here.

The park supports a high diversity of native animals and a large number of rare or threatened species, including the powerful owl, sooty owl, barking owl, tree goanna, tiger quoll and brush-tailed phascogale, and roosting colonies of common bent-wing bat and eastern horseshoe-bat.

Located within the dissected East Victorian Uplands (geomorphic unit 1.1), the plateau (described by land systems 1.1/Gs7₄ and 1.1/Gs8₁) and dissected (land systems 1.1/Ss7₂, 1.1/Ss7₃, 1.1/Ss7₄, and 1.1/Ss8₅) terrain here have developed on marine sediments of Silurian and Lower Devonian origin.

The existing national park was approved by the government following publication of the final recommendations for the Melbourne Area in January 1977.

Kinglake National Park

Recommendation

- A1** That the area of 9500 ha, indicated on Map A, be used in accordance with the general recommendation for national parks outlined above.

Notes:

1. About 15 ha in the east of the existing park is separated from the balance of the park by the Melba Highway and is further segmented by the main road to Toolangi. This is not included in the above recommendation and should revert to State forest.
2. It is proposed that the Kinglake Education Area (M8 in the 1977 recommendations) not be retained, see Chapter J - Community Use Areas. This area is already reserved as a zone within the existing park.
3. A further area of approximately 1620 ha of the existing park is located within the City of Whittlesea.

Additions to the Kinglake National Park

Two areas are proposed for addition to the existing Kinglake National Park. These areas facilitate ease of management of the park and contain important nature conservation and recreational values that complement and enhance the values of the park itself as well as those of the other parks and reserves in the State.

A2: Yea River addition to the Kinglake National Park

This proposed addition, of about 200 ha, comprises the area recommended by the Council in 1977 as the Yea River Regional Park.

The major recreational focus of this area is the floodplain of the Yea River, which is readily

accessible from the Melba Highway. The surrounding forest provides an important scenic backdrop.

West of the Yea River, the land rises steeply to Andrews Hill and contains no vehicular access.

It supports damp sclerophyll and shrubby foothill forests. Mountain ash is found in sheltered gullies. The relatively intact riparian forest along the river is considered to be of regional botanical significance.

This addition facilitates the management of the adjoining section of the existing park. Further, because Education Area J2 is incorporated as a zone within the existing park, the addition also provides a continuum of park straddling the Great Dividing Range along the western side of the Melba Highway.

Yea River addition

Recommendation

- A2 That the area of approximately 200 ha, indicated on Map A, be added to the Kinglake National Park and used according to the general recommendation for national parks outlined above.

A3: Wallaby Creek addition to the Kinglake National Park

Comprising the catchments to Wallaby and Silver Creeks, this proposed addition, encompassing some 6200 ha (including the enclosed reference areas), forms the bulk of the land that contributes water to the Wallaby Creek water supply system. This and the associated buffer areas are managed by Melbourne Water.

Topography and land systems

Ranging in elevation from 200 m to 700 m, this addition contains portion of the Mount Disappointment range.

Much of the soil is of granitic origin and forms flat to moderate slopes. Forming part of the dissected East Victorian Uplands geomorphic unit (1.1), the two main land systems here - 1.1/Sg8₁ and 1.1/Gg8₁ - are found only in the State in this vicinity and, except for the existing reference areas, are not otherwise represented in nature conservation reserves. A further land system included in this addition - 1.1/Ss7₃, comprising the steeply sloping land

on sedimentary rocks at the junction with the granite, is considered to be inadequately represented in conservation reserves in the State.

Vegetation

This land contains a substantial area of both mature and regrowth (most of which is of 1926 origin) wet sclerophyll forest of mountain ash. Much of the northern portion also contains mature damp sclerophyll forest of messmate.

The mature, relatively undisturbed examples of cool temperate rainforest, wet sclerophyll and damp sclerophyll forest, shrubby foothill forest and riparian forest here are considered to be of State botanical significance. The stands of tall, old, mountain ash trees are also considered to be of State historical significance as examples of the forests that preceded settlement.

Fauna

The older-aged forests here provide important habitat for hollow-dependent species and the cool temperate rainforest provides breeding habitat for the pink robin.

Cultural values

The Wallaby and Silver Creek water supply schemes were built between 1883 and 1887 to supplement the Yan Yean system. The facilities were built of local stone and crafted to a high standard. The various elements of this scheme are considered to be of State historical significance. Those incorporated in the park addition include the weir, aqueduct and 600 metre-long tunnel associated with Silver Creek, and the Nimmo Falls quarry - which supplied the granite facings for the project (regional significance).

Other values

This area retains high biological integrity because of the protective forms of management undertaken by Melbourne Water and its predecessors. Nothing in these recommendations is intended to reduce this level of protection.

The area's principal values to the parks system of the State lies in its representation of essentially natural mature and regrowth forests and of land systems. It contributes a component to the Kinglake National Park which is based principally on nature conservation and provides an important scientific and educational resource. Much of

the existing park, on the other hand, is oriented towards a range of recreational uses. The area has been used for long-term studies of the ecology of ash forests.

During the 1983 wildfires, large areas in this catchment were burnt and significant stands of mountain ash were killed or damaged. The burnt areas were salvage logged under prescriptions designed to protect water values.

This area is used infrequently for supervised tours of the forests. Melbourne Water is reviewing the possibility of providing further opportunities for supervised or controlled access for the public in its catchments.

The preamble to the proposed Central Highlands National Park (see Recommendation A7 below) includes a number of principles for management of the park which recognise the separate but complementary functions of the Department of Conservation and Natural Resources and Melbourne Water. These principles are directed towards co-operative management of the areas of land which make up the park but which would remain the direct responsibility of the respective instrumentalities. Similar arrangements are proposed for the Wallaby Creek addition to the Kinglake park.

Wallaby Creek addition

Recommendation

A3 That the area of approximately 5600 ha, indicated on map A, be added to the Kinglake National Park and used to:

- (i) supply water and protect catchments and streams
 - (ii) conserve and protect natural ecosystems
 - (iii) protect sites of cultural importance
 - (iv) consistent with (i), (ii) and (iii) above, provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- that
- (v) the results of hydrological research that would achieve positive benefits for both water yield and protection of the natural values be incorporated in the management plan
 - (vi) the timing, location, nature and intensity of scientific, educational and recreational use be subject to joint agreement between Melbourne Water and the Department of Conservation and Natural Resources

- (vi) harvesting of forest products not be permitted
 - (vii) grazing by domestic stock not be permitted
 - (viii) exploration for and extraction of earth resources not be permitted
 - (vii) commercial or recreational hunting not be permitted
 - (vii) no new public vehicular access be provided within the water-supply catchments
- that
- (ix) the two agencies enter into a Co-operative Management Agreement for this portion of the park
 - (x) a management plan be prepared which accommodates the principles outlined above
 - (xi) an Advisory Committee, comprising representatives from Melbourne Water, the Department of Conservation and Natural Resources and community interest groups be established to co-ordinate the preparation and implementation of the management plan

and that the area be included on a schedule to the *National Parks Act 1975* with specific recognition in the *Act* of the Co-operative Management Agreement.

Notes:

1. The park encloses Reference Areas B1 and B2 (totalling about 600 ha in the study area) which usually form zones within a park.
2. As a result of the declaration of the City of Whittlesea, the upper Plenty River catchment, which is part of the Wallaby Creek water supply system, is no longer within the Melbourne Area, District 2. This catchment also contributes to the high nature conservation and scientific values of the forests of the region. In addition to those plant communities represented in the Wallaby Creek and Silver Creek catchments, it contains heathy dry forests. The rare plant - creeping grevillea - occurs here.

It includes "The Cascades" - a series of granite steps some 220 m long in the Wallaby Creek aqueduct, designed to break the flow of the water as it descends into Jack Creek. Built in 1883, this, the Jacks Creek channel (1886), and the Toorourrong Reservoir (1885) - all within the catchment - are considered to be of State historical significance.

Council believes that the Plenty River headwaters (which, together with the larger part of the Disappointment Reference Area and the Joey Creek Reference Area, totals some 4220 ha) would make an important contribution to the Kinglake National park and that consideration should be given to its inclusion with the Wallaby Creek addition. Together with the reference areas surrounded by the park, this would bring the total area of the Kinglake National Park to some 14 700 ha.

A4: Baw Baw National Park

The Baw Baw National Park was recommended by the Council in 1977 and includes the Baw Baw Plateau and steeply dissected terrain in the valleys of the Aberfeldy and Thomson Rivers.

The plateau is composed of granodiorite and the distinctive features associated with its weathering are considered to be of national geological and geomorphological significance.

A high proportion of the plateau supports treeless alpine vegetation (dry sub-alpine shrubland, damp sub-alpine heathland, and wet sub-alpine heathland) but also includes sub-alpine woodlands of snow gum, riparian thickets, and montane wet forest. Populations of 14 rare and threatened plant species occur here and contribute to its classification as an area of national botanical significance. The steep southern fall to the Thomson River, which includes Mount Erica, supports cool temperate rainforest as well as wet sclerophyll

and damp sclerophyll forest and is considered to be of State botanical significance. The eastern section that includes the lower reaches of the Aberfeldy River supports heathy dry forests, shrubby foothill forests and damp sclerophyll forests.

A unique faunal assemblage occurs on the plateau and includes the only known habitat of the Baw Baw frog - a vulnerable species. The park also supports the rare broad-toothed rat and areas of older forest here provide habitat for a range of hollow-dependent fauna such as the endangered Leadbeater's possum and rare sooty owl.

The park provides excellent opportunities for snow-play and cross-country skiing in remote, semi-remote and natural settings as well as bushwalking, rock climbing, canoeing and, where appropriate, fishing, horse-riding and four-wheel-driving. It forms part of the catchment of the Thomson Reservoir.

In its 1977 recommendations, the Council specified that:

- * no further villages be developed on the plateau
- * no skiing facilities be developed on the Thomson side of the plateau
- * the Nordic ski trails (the St Phillack Loop Trail and the Tullicoutty Cup route) associated with the Baw Baw Alpine Resort be maintained
- * a proposed road from Rocky Knob to Baw Baw village not be built
- * the Thomson Valley Road continue to provide the access to the upper Thomson valley

Further, in its Final Recommendations following the Wilderness Special Investigation, the Council in 1991 recommended that the plateau be protected as an area "with remote and natural attributes". This recommendation was made in recognition of its relatively large size, absence of vehicular tracks, virtual absence of structures, essentially natural condition, and the opportunities for self-reliant recreation - including snow-based activities. That area is now included on Schedule 6 of the *National Parks Act 1975*.

Baw Baw National Park

Recommendation

A4 That the area of approximately 12 500 ha, indicated on Map A, be used in accordance with the general recommendation for national parks outlined above and for those purposes approved by the government following publication in November 1991 of the final recommendations arising from the Wilderness Special Investigation.

Notes:

1. It is proposed that the Baw Baw Reference Area be expanded (see Recommendation B11).
2. It is proposed to excise a small area from the park to provide for minor extensions to the boundary to the Baw Baw Alpine Resort (see Recommendation I4).

A5: Nepean National Park

In 1977, the Council recommended that the larger blocks of public land on the Mornington Peninsula - which included the Bass Strait coastline, extending from Point Nepean to Flinders, Highfield Farm and Greens Bush (then recently acquired), and at Arthurs Seat - should be reserved as the Cape Schanck-Arthurs Seat Regional Park.

The government subsequently acquired additional land in the region, principally portions of former Commonwealth Government

land at Point Nepean, and land at Greens Bush and around Arthurs Seat. In 1988, the government proclaimed the Point Nepean National Park.

The current Point Nepean National Park essentially comprises two large parcels of land. One, of 1200 ha, stretches for some 40 km along the Bass Strait coastline from Point Nepean to Flinders. The other, of about 1250 ha and which extends inland from Cape Schanck and comprises the two adjoining areas of Highfields and Greens Bush, contains the largest remaining area of remnant native

vegetation on the Mornington Peninsula. These two parcels of land complement each other's natural and recreational values.

The Council's current review of land in the region has taken into account the additional areas of land acquired by the government since 1977, the representation of land systems and the assessment of the significance of the floral and faunal values of the land (described below), the area's importance for recreation and, in particular, the nationally significant historical values of the Point Nepean area (within a portion of the existing park outside the study area). In the context of these values, the Council endorses the existing national park status of the land.

Topography and land systems

The coastline of the park is fringed by extensive wave-cut platforms and displays a wide variety of geomorphic features derived from rocks of both calcareous and volcanic origin. These range from cliffs and bluffs with shore platforms and small off-shore stacks, to dunes and sandy beaches. Point Nepean (within the existing park but lying just to the west of the study area) provides additional examples of calcareous cliffs and shore platforms and abuts the Harold Holt Marine Reserve.

The park provides the only representation in the Victorian conservation reserve system of three particular land systems: those formed within the barrier complexes of the Southern Victorian Coastal Plains (geomorphic unit 8.5), comprising unconsolidated calcareous sands (land system 8.5/PCcl7) and siliceous sands (8.5/PCc75), and land system 3.3/Gvf72, comprising clays of volcanic origin within the geomorphic unit (3.3) of the moderately dissected ridge of the Southern Victorian Uplands.

Vegetation

A range of vegetation communities characteristic of coastal areas is found here and includes coastal associations of dune scrub, banksia woodland, grassy forest, tussock grassland and heathland, as well as riparian forest, and swamp and sand heathland. A number of significant plants are found here, including the rare species - helmet-orchid (*Corybas despectans*), a daisy-bush (*Olearia* sp.aff. *lanuginosa*) and netted brake (*Pteris comans*), and the endangered species - dainty maidenhair (*Adiantum capillus-veneris*), purple

eyebright (*Euphrasia collina* ssp. *muelleri*) and coastal tobacco (*Nicotiana maritima*).

While the majority of the park supports remnant native vegetation, some of the previous farmland is cleared or semi-cleared, principally in the north and around the original Highfield farm-house. The farm-house remains and is used as a base for visitors to the park. Some cleared areas have been fenced and are regenerating, others may be maintained as grazing areas for kangaroos (to reduce grazing pressure on adjoining farmland), and some will be required for fire breaks and access.

Fauna

Faunal values of the park are also high, containing as it does the most extensive remnant of coastal grassy forest habitat on the Mornington Peninsula. It supports two rare species - the powerful owl (*Ninox strenua*) and Lewins rail (*Rallus pectoralis*).

Cultural

Although Point Nepean lies outside the study area, its significant cultural values contribute to the 'national' status of this park. These values arise from a range of historic features, including Fort Nepean (occupied from 1882 to 1945 and which includes gun emplacements, bunkers, barracks, and engine houses), the cemetery (dating from 1854 to 1951), and other fortified areas at Eagles Nest and Fort Pierce.

Recreation

The coastal area has had a long history of recreational use. Picnic areas, lookouts and walk-ways were constructed throughout the Sorrento Back Beach area in the 1870s by the entrepreneur - George Coppin, and are still in use. Intensively used recreational nodes include London Bridge, Portsea Back Beach, Sorrento Back Beach, Koonya Ocean Beach, Blairgowrie Back Beach, Rye Ocean Beach, St. Andrews Beach, Gunnamatta Beach, Pines picnic area, Cape Schanck, and Flinders. Facilities and activities along the beach include hang gliding, horse-riding, car-parks, toilet blocks and changing sheds, beach shacks, extensive board-walks, surf life saving club-houses, picnic areas and barbecues, as well as a large number of additional beach access points where the only facilities are generally car-parks and pedestrian walk-ways.

In contrast, public access is limited at Point Nepean due to the presence of unexploded

munitions (a legacy of the occupation by the Department of Defence), and the Greens Bush area is used mainly for passive recreation and limited horse-riding.

Other values

The Cape Schanck Lighthouse was completed in 1859, making it one of the State's earliest. The lighthouse reserve is currently Commonwealth freehold (under the jurisdiction of the Australian Maritime Safety Authority) and forms an inlier in the existing park. Although the Authority requires the lighthouse, the remainder of the reserve, which includes the lighthouse keepers' cottages and other associated buildings, was recently declared surplus by the Commonwealth Government. Under existing administrative procedures the State Government has first right of refusal and

negotiations for possible transfer to the State are in progress.

Although the immediate environs of the lighthouse are cleared, the reserve includes the surrounding cliffs and bluffs and much of it supports native vegetation which is contiguous with that of the surrounding park.

In view of the location of the lighthouse reserve within the park and its intrinsic natural and historic values, the Council believes that the reserve would form an appropriate addition to the park should negotiations for its transfer be successful. Council is aware that the lighthouse and one of the keepers' cottages are presently leased by a commercial operator and that a concession exists for tours of the lighthouse.

Nepean National Park

Recommendation

A5 That the area of 2250 ha, indicated on Map A, be used in accordance with the general recommendation for national parks outlined above and for those purposes approved by the government

and that

- (ix) subject to an assessment of their historic value, the remaining beach boxes at Flinders be removed.

Notes:

1. An additional area of some 200 ha of the Nepean National Park falls within the Melbourne Area, District 1.
2. The park includes cleared land in the Highfield and Greens Bush sections and the Carrum Downs sewer ocean outfall crosses the park at Boags Rocks.
3. The refuse transfer station and the nearby Sorrento cemetery are excluded from the park (it is proposed that these be Services and Utilities Reserves - see Chapter M).
4. The Cape Schanck Lighthouse Reserve is surplus to Commonwealth requirements and is subject to current negotiations for transfer to the State. Council believes that, subject to the negotiations, the reserve should be included in the park. Further, Council believes that other suitable areas of Commonwealth land at Point Nepean should be included within the park.
5. Council is aware that part of the Cape Schanck car park is on municipal freehold. It believes that this area should also be included in the park.
6. The historic Point Nepean cemetery is within the park but outside the study area. Council believes that this historic cemetery should be closed to further burials.

NEW NATIONAL PARKS

A6: French Island National Park

Council in 1977 recommended that virtually all of the public land on French Island be included in a State park. This recommendation was accepted by government and the park is on the schedule of the *National Parks Act 1975*.

Since 1977, the government has exchanged and acquired a number of parcels of land on the island such that the majority of the remaining native vegetation there now lies within a contiguous block of public land.

Council considers that all land acquired since 1977 should be included in the park and, in recognition of the area's very significant

natural values (described below), it should be a national park.

Topography and land systems

The bulk of French Island comprises fans and terraces formed from sands and clays in the South Victorian Coastal Plains geomorphic unit (8.4). The only substantial representation within nature conservation reserves of the land systems of the coastal sand plains (8.4/PCc7) and clayey-sand plains (8.4/Pcf7) of Western Port are found in the French Island park.

Vegetation

The French Island park is considered to be of at least State botanical significance because of the high quality, representative examples it contains of sand heathland of heath tea tree (*Leptospermum myrsinoides*), shrubby foothill forest of messmate and narrow-leaf peppermint (with an understorey of heath tea-tree and prickly tea-tree - *L. juniperinum*), swamp scrub, coastal heathland, coastal saltmarsh and swamp sedgeland.

Further, the park contains the rare plants - burnettia (*Burnettia cuneata*), bog clubmoss (*Lycopodium serpentinum*), long pink-bells (*Tetratheca stenocarpa*), blotched sun-orchid (*Thelymitra Benthamiana*), tall sun-orchid (*T. media* var. *carno-lutea*), and French Island sun-orchid (*T. sp.aff. ixiodes*), as well as the vulnerable species - a spider orchid (*Caladenia insularis*), slender leek-orchid (*Prasophyllum parviflorum*), prawn greenhood (*Pterostylis pedoglossa*) and hoary sun-orchid (*T. mucida*).

Fauna

French Island's isolation from the mainland (which has prevented its invasion by foxes) and the limited degree of disturbance of the vegetation has enhanced its importance for the rich vertebrate fauna it supports, with more than 230 species recorded. The island is the stronghold in Victoria for the rare king quail and in the study area for the uncommon long-nosed potoroo. It is used by the rare and endangered orange-bellied parrot on its migration from Tasmania and supports one of Victoria's four permanent breeding colonies of the Australian pelican. The last remaining

breeding site in the study area of the white-bellied sea-eagle is located in open forest near Red Bluff on State Electricity Commission land. The island also supports good populations of the uncommon swamp skink.

Cultural and recreation

The McLeod Prison Farm, on the south-eastern side of the island, was established in 1915; the main cell block complex buildings being constructed in 1946. The prison was closed in 1975. Since that time it has operated as a youth camp and used for tourist accommodation and accordingly, in 1977, the Council recommended that it be set aside as a recreation reserve.

The site represents a special era in the approach to prisons and, in view of its classification of State historical significance, the Council believes that the basic integrity of the buildings and their context should be maintained and that it forms a logical focus for the park. While public access from the mainland is difficult, being largely restricted to boat from Corinella, the old prison farm is well situated to provide accommodation for school and community groups visiting the island and has potential to provide a base for education, interpretation and exploration of the surrounding park and the prison complex, and for comparative studies of the modified landscapes of the complex with the surrounding natural vegetation.

Other

The State Electricity Commission (SEC) purchased land near Red Bluff for a possible thermal power station, but the site is now surplus to requirements. Native vegetation covers the majority of the site and includes areas of open forest which are of limited distribution on the island. In 1977, the Council recommended that, should the site not be required for a power station, it should be added to the French Island park; in light of the fact that the land is not so required, the Council now reaffirms that recommendation.

The SEC has recently identified a number of parcels of public land that it currently leases and which it believes could be suitable for exchange for the land near Red Bluff.

French Island National Park

Recommendation

A6 That the area of 8800 ha, indicated on Map A, be used in accordance with the general recommendation for national parks outlined above

that

- (ix) its boundary be 150 m seaward of high water mark (see Note 2 below)
- (x) the site of the former McLeod Prison Farm be managed as a special historic zone within the park and detailed proposals for its development be undertaken in consultation with the French Island community
- (xi) hunting not be permitted

and that it be included on a schedule to the National Parks Act 1975 and managed as a National Park.

Notes:

1. The proposed park includes the southern tip of Tortoise Head, coastal frontage at Stockyard Point, public land frontages along Red Bill and Mosquito Creeks (which retain riparian vegetation contiguous with the existing park), the former McLeod Prison Farm, Barralliar, Pelican and Ram Islands, and the SEC land at Red Bluff.
2. The future status of the tidal zone (150 m seaward of high water mark) will be investigated in the context of the nature conservation values of the whole of Western Port during Council's Marine and Coastal Special Investigation. Management provisions to ensure the protection and/or sustainable use of the marine resources of the area will also be addressed at that time. This proposed recommendation highlights the important values of the area, but Council will take account of the broader study during consideration of the final recommendations. The area of 8800 ha of the park stated above does not include the tidal zone.
3. The SEC has identified a number of parcels of land that it believes would be suitable to exchange for the land at Red Bluff. The transfer of the Red Bluff land to the Department of Conservation and Natural Resources should be expedited. This land is one of the possible cable landing and converter sites for the proposed 'Basslink' power grid with Tasmania (see Chapter M - Services and Utilities). Such a proposal could require a small onshore easement or site for facilities; these could be accommodated as a special zone within the park.
4. Active management to prevent further invasion by exotic softwood species is required.

A7: Central Highlands National Park

Encompassing some 73 500 ha, this proposed park incorporates the catchments of the Maroondah, O'Shannassy, and Upper Yarra Reservoirs that feed into Melbourne's domestic water supply system, and extends north to include Lake Mountain. The upper reaches of the Acheron River and Armstrong Creek and a section of the Cement Creek catchment provide important links between these areas and are also valuable additions to the park.

The three catchments and the proposed links contain arguably the best representation of mature wet sclerophyll forests and cool temperate rainforests in the State. As such, they provide one of the most significant areas for the protection and maintenance of mature wet forest habitat which, amongst other values,

is of major importance to those faunal species that depend on hollow-bearing trees for their survival.

The proposed park also contains good representations of several major land types that, although extensive, are confined to the Central Highlands. A detailed discussion of these and other values is provided below.

Over one hundred years ago, the Government which instituted Melbourne's water supply decided that, to protect water yield and quality as much as possible, the catchments from which it was gathered should be managed by the water supply authority and used solely for water harvesting. It was decided that people should not be allowed to undertake activities which could affect the catchment adversely.

The policy of strict control on activities has been maintained in the catchments of the Maroondah, O'Shannassy and Upper Yarra Rivers, as well as in those of the other Yarra River tributaries that contribute to Melbourne's water supply (Cement, Armstrong, McMahons, and Starvation Creeks), and the Wallaby Creek catchment. However, the form of management undertaken, which excludes routine timber harvesting and the provision of recreational facilities and includes strong emphasis on fire control, road maintenance, control of public access, and pest plant and animal control, has also significantly benefited flora and fauna conservation.

During preparation of these proposed recommendations, the Council considered a number of options for a larger Central Highlands National Park. The proposal set out below is considerably smaller than these options to take account of the needs of the timber industry. Respondents to these proposed recommendations must consider the implications of these proposals for conservation, recreation, water, timber and other community values.

Topography and land systems

Rising from an altitude of about 200 m on the valley floors to more than 1460 m, the proposed park includes the gentler slopes in the lower Maroondah catchment, broad ridge tops and deeply dissected slopes within the O'Shannassy and upper Armstrong Creek catchments, steep upper slopes that form the rim of the catchments, and the alpine plateau of Lake Mountain. The park lies at the western limit of the East Victorian Uplands - a major geomorphic province of the State (the dissected uplands comprising geomorphic unit 1.1).

The land system that encompasses the red and brown earths (1.1/Sv8₁ - found in a number of valleys in the proposed park) and that of the shallower stony earths (1.1/Sv8₂ - which comprises the bulk of the Maroondah, O'Shannassy and upper Acheron River catchments, and the steep slopes surrounding the Lake Mountain plateau) are derived mainly from volcanic rocks of Upper Devonian origin and are confined to the study area. The former also appears in riparian situations elsewhere in the Yarra Valley. Elsewhere, land system 1.1/Sv8₂ is found in the Snobs Creek basin in State forest to the north and small areas fall within the Dandenong Ranges State Park. The small, undulating, basaltic plateau of Lake Mountain (described by land system 1.3/Gv9₁)

is similar to the High Plains (geomorphic unit 1.3) occurring in the Alpine National Park.

The brown earths of the Upper Yarra River catchment are derived from sedimentary rocks of Lower Devonian origin. The steep slopes forming the bulk of this catchment comprise land system 1.1/Ss8₂, which is also confined to the study area. This land system is also located in the timber-producing leased water-supply catchments of McMahon and Starvation Creeks (not within the proposed park). The other land system of the steep country - 1.1/Ss8₃ - covers only a small area here but is widely represented in the Alpine National Park to the east.

A small area of gentler sloping country within the south-eastern rim of the Upper Yarra catchment comprises land system 1.1/Gg8₈. Consisting of friable earths derived from granitic rocks of Devonian origin, this land system is confined to this region of the Central Highlands and is considered to be poorly represented in conservation reserves in the State. It also forms the Toorong Plateau which is outside the park and an important timber production area.

Also derived from granitic rocks and in the south of the Upper Yarra catchment is a small area of steep-sloped hills of red and brown earths in land system 1.1/Sg8₃. This is also confined to the study area but covers an extensive region and occurs in both the Baw Baw and Bunyip parks.

Two other land systems of the more gentler sloping country on sedimentary rocks make up the balance. 1.1/Gs8₂ includes the red and brown earths of the small plateaux in the Upper Yarra and O'Shannassy catchments. This land system occurs in reserves elsewhere in the State. A small area of 1.1/Gs7₂, which consists of yellow duplex soils on gentle slopes, lies immediately adjacent to the Upper Yarra Reservoir. This land system occurs only in small pockets and is confined to the study area. Most of its occurrences are on private land and it is considered to be poorly represented in the State-wide system of conservation reserves.

Vegetation

The proposed park contains a wide diversity of plant communities, providing substantial representation of the mountain and foothill forests of the Central Highlands of Victoria and, at Lake Mountain, an element of the

alpine environments. Its large size and the limited amount of disturbance provide the rich and diverse vegetation with a high degree of protection, ensuring its long term viability.

Of the 20 broad vegetation communities identified in the Council's 1991 Descriptive Report for the sub-alpine, montane, moist and dry forests of the region, 14 are located in this proposed park. Those not included lie mainly in the north of the Central Highlands and are largely represented in the Cathedral, Kinglake and Eildon parks.

The moist forests here comprise extensive areas of mature, undisturbed cool temperate rainforest, good quality mature and regrowth wet sclerophyll (mountain ash) forest, and damp sclerophyll (messmate and mountain grey gum) forest. There are also riparian forests comprising manna gum and blackwood and riparian thickets that include woolly tea-tree and scented paperbark. The plant communities also include wet forests of shining gum and, at higher altitudes, montane damp forests of alpine ash as well as montane riparian thickets of mountain tea-tree, myrtle beech and Baw Baw berry. The lower slopes support foothill forests of messmate and narrow-leaf peppermint, with heathy dry forests of broad-leaf peppermint on the more exposed slopes.

The degree of representation in existing parks and nature conservation reserves in central Victoria of wet sclerophyll forest and cool temperate rainforest is regarded as deficient, if the occurrence of these communities in the Melbourne Water catchments is ignored. Table 4 in Chapter C - Nature Conservation Reserves - provides an indication of the increased representation within conservation reserves of the range of vegetation communities found in the study area that would be achieved under these proposed recommendations; the majority of the increased representation occurs within this proposed new park.

The Maroondah, Acheron and O'Shannassy catchments are considered to be of National botanical significance, while those of Armstrong Creek and the Upper Yarra River are classed as of State botanical significance. This significance is attributed to their representation of the component plant communities, the richness and variety of plants that they contain, and the ecological integrity and viability of the vegetation arising from their large size and history of protection. Their scientific and educational values are also very high. The Upper Yarra catchment, in

particular, supports a wide range of vegetation types, from heathy dry forests on the exposed, lower slopes of Clear Creek, to wet sclerophyll forests and rainforest.

The montane and foothill forests of the proposed park contains the rare species - slender tree-fern (*Cyathea cunninghamii*), tree geebung (*Persoonia arborea*) and tufted club-sedge (*Isolepis wakefieldiana*), as well as shiny phebalium (*Phebalium wilsonii*) and bog sun-orchid (*Thelymitra circumsepta*), both of which are classed as vulnerable in Victoria.

Lake Mountain lies at the western limit of sub-alpine vegetation on mainland Australia. This area, particularly, has very significant nature conservation values. It is notable for the high diversity of plant species (over 150 indigenous species) and communities - which encompass the full range of sub-alpine forms from alpine bogs, herbfield/grasslands, heaths, and wet alpine heaths, to woodlands, tall open forest, and rainforest, within a relatively small area. More than one third of the plants recorded above an altitude of 1200 m are at the western limit of their distribution in Victoria and some species are at the lowest altitudinal limit of their range.

The botanical importance of the Lake Mountain area also arises from the presence of a number of significant species, such as the rare and restricted wood sorrel (*Oxalis magellanica*) and other rare and interesting species, such as bent-grass (*Deyeuxia parviseta*), wax berry (*Gaultheria appressa*), and mountain hook-sedge (*Uncinia compacta*), including three species endemic to Victoria - Baw Baw berry (*Wittsteinia vacciniceae*), lilac berry (*Trochocarpa clarkie*) and forest sedge (*Carex alspbila*). An interesting (and very old) stand of mountain plum-pine (*Podocarpus lawrencei*) also occurs here.

The bog and heath communities display a unique ecology associated with the successional stages and include rare and interesting plant species such as turquoise coprosma (*Coprosma moorei*), Baw Baw daisy (*Brachycome obovata*), forest sedge and lilac berry, which are apparently restricted to these sites.

The areas of botanical significance extend beyond the bogs and heathlands. Baw Baw berry and wax berry are associated with the snow gum woodland and the myrtle beech (*Nothofagus cunninghamii*) rainforest. Myrtle beech is also a species of biogeographical significance.

The Flora Branch of the then Department of Conservation and Environment prepared maps (at 1:100 000 scale) broadly depicting the floristic vegetation of the study area. These have enabled the degree of representation of the plant communities within the proposed park and other nature conservation reserves to be estimated (see Table 4 - Chapter C).

Cool temperate rainforest, for instance, occurs in protected gully heads and associated slopes and along streams throughout the wetter, mountainous parts of the region. Of about 2375 ha of this community on public land in the study area, more than 62% is located in existing and proposed parks; the majority of which is in the proposed Central Highlands park.

'Old-growth', or 'ecologically mature' forests have high conservation values and have diminished in extent since European settlement. Old growth wet sclerophyll (mountain ash) and montane (alpine ash and shining gum) forests - known collectively as 'ash forests' - have received particular attention.

There are several definitions of 'old growth' which generally focus on the key features of old and large individual plants and the natural condition of the vegetation. However, as discussed in Chapters C - Nature Conservation Reserves, and E - Timber Production and State Forest, any of the older-aged forests in which the trees have achieved sufficient maturity to form hollows, are important for hollow-dependent fauna. To avoid confusion with other definitions and to facilitate recognition of the importance for wildlife of any of the older forests, the Council has employed the term "older-aged forests" when referring to these areas.

The extent of the older-aged forests in the Central Highlands is not yet accurately known and, as explained in Chapters C and E, the Department of Conservation and Natural Resources has started a study of the old growth forests of the region to contribute to an investigation by the Australian Heritage Commission. When completed, that study will provide detailed information about the location, extent and condition of the older-aged forests. Nevertheless, current hardwood timber resource estimates for the region provide indications of the extent of 'mature and overmature' forests; maturity is determined from a sawlog perspective and is usually equated with forest stands that regenerated

prior to about 1900. These mature and overmature stands are considered by the Council as being equivalent to older-aged forests.

The sawlog resource documents record a total of some 30 000 ha of mature and overmature ash forest for the study area. The three main water supply catchments within the proposed park, alone, contain almost 13 500 ha, or 42% of that total.

Older-aged forests of other eucalypt (mixed) species, however, are also considered to have high conservation values. The study area contains a total of almost 195 000 ha of mature and overmature mixed species forest. Almost 18 000 ha (5% of the total) is located in the three Melbourne Water catchments within the proposed park.

Fires prior to and following European settlement have produced a mixture of age classes in the vegetation. Although the regrowth forests originate mainly from the 1939 fires, there are also regrowth stands ranging from 10 to 66 years old and older stands ranging from about 90 to more than 230 years of age.

The dynamic nature of the forests also means that there are many occurrences of younger age classes within the more mature stands. Much of the understorey species of the older forests of the O'Shannassy catchment, for instance (except in some gullies and sheltered areas), are of 1939 origin, and small patches of ash eucalypt regeneration of a variety of ages have replaced individual mature trees which have fallen or died or are growing in small openings caused by the various fires.

There is little evidence of timber harvesting in the main catchments; much of the early activity was selective felling. No logging took place in the O'Shannassy catchment after 1910, nor in the Upper Yarra after 1956. Except for small-scale clear-felling and thinning operations associated with hydrology research on the south face of Mount Riddell and to the north of Fernshaw, no logging has taken place in the Maroondah catchment since 1890.

Fauna

The proposed park has very high faunal significance, making it one of the key regions in the State for its diversity of mammals and other vertebrates. The large areas of undisturbed, old and mixed-age forests are

particularly important for the conservation of hollow-dependent species such as arboreal mammals, bats, owls and parrots. This is enhanced by the diversity of types and age in the vegetation which provide habitats for a broad range of species.

In particular, it contains the hollow-dependent significant fauna - Leadbeater's possum, which is classified as "endangered"; the proposed park contains more than 20% of its known distribution), large-footed myotis (threatened) and the sooty owl (listed as rare). Other hollow-using species here include the great pipistrelle, yellow-tailed black cockatoo, and yellow-bellied glider.

The rainforests here provide spring and summer breeding habitat for the pink robin - listed as uncommon and restricted to south-eastern Australia. In addition, the Maroondah catchment contains the entire known population of the vulnerable Mount Donna Buang wingless stonefly (*Riekoperla darlingtoni*) - one of the two Victorian species listed by the IUCN, and the rare smoky mouse occurs on the dry ridge-tops in the Upper Yarra catchment.

Lake Mountain is one of the few known localities of the rare copepods - *Canthocamptus dedeckeri* and *C. mammillifurca* - found in the sub-alpine heathlands.

The Lake Mountain fauna also includes several other species of significance including Leadbeater's possum, which has been recorded in both the alpine ash community and snow gum woodland, and dusky antechinus which was recently recorded in dense heath at Helicopter Flat. This species was not expected in the area.

One of the principal considerations for the linking of the three water-supply catchments has been the necessity to secure a range of forest types and ages and thus protect the existing and potential, contiguous habitat - mainly of Leadbeater's possum, but also of other species that require intact older-aged and regrowth forests. Leadbeater's possum, for instance, inhabits the contiguous forests of the upper Acheron, O'Shannassy, Maroondah, upper Armstrong and Upper Yarra catchments; populations of sooty owl are also found here. The proposed park forms part of the Council's response to the principles and provisions being formulated for the conservation of the habitat of Leadbeater's possum (see Chapter C - Nature Conservation Reserves).

Further discussion about provisions within State forest for linking parks and reserves and other nodes of nature conservation value is provided in Chapter C.

Cultural

The extensive forests of mature and mixed aged trees here are considered to be of historical importance as representing what were once more common features of the forests of the Central Highlands.

Although no specific sites of Aboriginal occupation have been identified in the area, the extent of scatters of artefacts indicate that the Central Highlands were probably occupied sporadically and on a seasonal basis.

The Cumberland Scenic Reserve (initially reserved in 1923) is included in the park as too is the Furmston Tree, in the north-east of the Maroondah catchment. This tree is possibly 400-years old and is considered to be of State historical significance as a specimen and for its social role as a popular recreational venue in the 1930s (this tree, however, is considered dangerous as it is in a final stage of senescence and may collapse in the near future). Of State significance also is the Big Tree (of the order of 200 years old) on the Nine-mile Road at the head of the Upper Yarra catchment.

A number of mines was established from the 1860s in the gold field extending from Warburton up the Reefton Spur, some of which continued to operate until at least 1939. About nine, including the Contention Mine, have been identified in the park as well as associated aqueducts, camp sites and other artefacts (including Brown's camp, associated with the Bears - Donovans Creeks sluicing areas). Sluicing for gold was also carried out in the Upper Yarra field at Warburton from the late 1850s and the artefacts remaining here include water races, open cut mines, shafts, tunnels and small dams. The many features of this field is now accessible via the "Upper Yarra Goldfields Walk" - within the proposed park. Also within the park are the Big and Little Peninsula Tunnels on the Yarra River. Both tunnels are attributed to Chinese miners and date from about the 1870s.

In the 1860s, also, the Yarra Track was established to link the Woods Point goldfields to Melbourne. This travelled up the Watts River to Fernshaw (closed as a settlement in the late 1880s when the area became part of the metropolis' water supply catchment), then over

Mount Dom Dom, across the Acheron valley to Mount Strickland, and across the Paradise Plains (a settlement abandoned in 1864 in favour of Marysville) to the Cumberland River, then along The Great Divide to the goldfields beyond Matlock. Evidence of this route, including the Big Culvert near Cambarville, remain. The Baw Baw Track (1899) which followed the Upper Yarra River was upgraded by the Public Works Department in 1906 to link Warburton township with Walhalla across the Baw Baw plateau. The remains of a hut associated with this route are located adjacent the river near Falls Creek (also once a popular scenic spot before closure of the catchment).

Access and recreation

The high tourism potential of the park arises from its close proximity to Melbourne and the townships of Healesville, Warburton and Marysville, in combination with its outstanding natural and cultural values.

Lake Mountain is a rapidly growing cross-country skiing and snow-play area and received about 200 000 visitors in 1990. The access road and car parks for this area are contained within the Lake Mountain Alpine Resort. The main skiing areas, however, are outside it. The Council is proposing that the land comprising the Lake Mountain Alpine Resort be deleted from the schedule to the *Alpine Resorts Act* 1983 and be included in the park, but that the Alpine Resorts Commission continue to manage the winter recreation facilities and services by arrangement with the Department of Conservation and Natural Resources (see Chapter 1 - Alpine Resorts).

Public vehicular access is possible through and around the park along main roads such as the Maroondah Highway, the Acheron Way and the Marysville - Woods Point (Cumberland), Warburton - Woods Point (Reefton Spur), and Toorongo Roads. All are popular tourist routes and offer scenic views. Other minor roads and tracks provide access to sections of the perimeters of the three water supply catchments. The Ben Cairn Road provides panoramic views of Warburton to the south and into the Maroondah catchment to the north.

A number of walking tracks have been constructed here which provide access to lookouts such as Mount Donna Buang, to waterfalls like the Cora Lyn and Cumberland falls and through a section of the Upper Yarra goldfields.

Day-walking tracks have been available in the Maroondah water supply catchment for some 100 years and provide access to Mounts Juliet, Monda, St Leonard and Riddell and to Carters Gap - overlooking the Acheron valley. There is potential for other walking tracks to be provided, including within the water supply catchments, away from water courses. Melbourne Water is currently reviewing the possibility of providing more opportunities for further limited, unsupervised access and other controlled access for the public in these areas.

The proposed park contains a wealth of scenic tall mountain forests, fern gullies and rainforests, including the magnificent old, rich and undisturbed forests of the O'Shannassy. A rich fern gully vegetation is found in the Acheron valley which includes very old stands of king fern; some of the largest mountain ash and some of the oldest, and least disturbed, fern gullies are located in the Cumberland reserve.

A number of picnic sites have been developed, such as that at Donnelly Weir, Fernshaw and Cambarville as well as at the tunnels on the Big and Little Peninsulas on the Yarra River. Other picnic sites are available adjacent to the park below the Maroondah and Upper Yarra Dams and at Somers in the Acheron valley.

Access to the catchments for scientific study of the values specific to those areas has been possible in the past and this provision will continue. The proposed park is valuable as a venue to observe and study arboreal mammals; the accessibility of Cambarville makes that area particularly important for this activity.

Melbourne Water manages a network of fire access tracks throughout the water supply catchments and nothing in these recommendations is intended to change this situation.

Other values

In its final recommendations in 1991, following the Rivers and Streams Special Investigation, the Council nominated the O'Shannassy as an "essentially natural catchment" (one of 26 in the State in which the physical and biological processes are essentially unimpaired by such activities as roadworks, clearing, logging, and stock grazing). The Council recommended that the catchment's high values for nature conservation and water quality be protected, but that it continue to be available for water production with Melbourne Water as the

manager. This was approved by Orders in Council on 7 July 1992 and will remain as an overlying zone in the proposed national park.

Implications for timber

Timber harvesting was specifically excluded from the O'Shannassy catchment when it was gazetted in 1908 and the Maroondah and Upper Yarra catchments are not available for timber production under Melbourne Water policy. That policy, however, does not preclude the salvage of wood from fire-killed trees (such as occurred in the Wallaby Creek catchment following a fire in 1982) or the potential for thinning of dense regrowth stands, if it is established that these activities would not adversely affect water quality and would substantially augment water supplies in the long term. Under these proposed recommendations, no harvesting of timber, whether as salvage following fire or to thin the forest, would be permitted in the park.

Timber harvesting is permitted in the catchments of the Cement and Armstrong Creeks (portions of which are within the proposed park), and the McMahons and Starvation Creeks under the arrangement that any two may be available for harvesting at a time; in practice, only one has been required for timber supply at a time. For the period that timber harvesting is being undertaken in a particular catchment, its water is allowed to flow directly into the Yarra River and is not used to supply consumers in the metropolitan area.

The proposed park contains a net area of 2307 ha of currently available productive forest and would make unavailable 265 148 cu.m of sawlogs and 388 346 cu.m of pulpwood. However, this net area includes 1006 ha of forest defined in the timber resource estimates as "mature/over-mature" which is a component of older-aged forests. This mature/over-mature component comprises 367 ha of ash forests which contain 51 356 cu.m of sawlogs and 106 903 cu.m of pulp, and 639 ha of forests of foothill mixed species containing 8866 cu.m of sawlogs and 20 786 cu.m of pulpwood which, under present prescriptions, would not be available for harvesting in any case. All of this resource, including the mature/overmature trees, are included in the calculated - legislated - sustainable yields of sawlogs from the respective forest management areas.

Table E11 in Chapter E - Timber Production and State Forest - indicates the reduction in

sustainable yield of sawlogs that would occur if these proposed recommendations were approved. On the basis that the sustainable levels of sawlog output would be reduced during the current licence period (1993 to 2001), the Central Forest Management Area (FMA) would experience a reduction in output of 2.6% (to 112 000 cu.m per annum), while the Dandenong FMA would experience a 5.1% reduction (to 38 900 cu.m per annum). The majority of the affected timber resources lie within the proposed Central Highlands National Park.

The Council is concerned at the implications for employment, business investment, and local communities that would arise if the output of sawlogs was immediately reduced. Accordingly, it is recommending that the impact on sustainable yield of the reduction in available resources should be deferred until the next licence period when an increase in the sustainable output is anticipated. Sufficient resources would remain available within State to permit an increase in output (albeit less than that currently anticipated) even after discounting the volume of timber included in the proposed new park and reserves (see Chapter E).

Implications for minerals

A broad area with high potential for gold and antimony mineralisation underlies the Armstrong Creek catchment and includes the goldfield that extends upstream along the Yarra valley from Warburton and along Reefton Spur. This field was tapped by a number of mines from the 1860s. The proposed park incorporates portion of this goldfield.

The balance of the proposed park lies within zones that have only partially been assessed for their potential for gold, tin and tungsten, but no commercially viable deposits are currently known from the area.

Implications for water

As indicated previously, activities in the Maroondah, O'Shannassy and Upper Yarra catchments are strictly controlled. The tributary catchments (Cement, Armstrong, McMahons and Starvation Creeks), on the other hand, are periodically available for timber harvesting; at which time the water is diverted directly into the Yarra River. Water from the Cement and Armstrong Creeks is also used to maintain environmental flows in the Yarra River.

The yield of water from the older ash forests is about double that of the regrowth areas. As the 27 000 ha (approximately) of ash-type regrowth in the Maroondah, O'Shannassy and Upper Yarra catchments matures over the next 50 years, their water yield will increase at an average rate of about 2000 Ml per annum to a total of about 95 000 Ml per annum. This increase is equivalent to about 25% of the Melbourne's current annual consumption. Ultimately, these catchments are expected to yield a maximum of about 130 000 Ml per annum.

The park proposal includes no changes to existing land uses that would compromise the quality or quantity of water currently supplied from the catchments. Water supply facilities and storages, including a 200-metre buffer around each of the storages, are not part of the park (see Chapter D - Water Production).

Arrangements to facilitate the co-operative management of the area as a park and a water supply area are set out below.

Melbourne Water Resources Review

The Melbourne Water Resources Review Panel, in its Interim Report of 1992 - "Water For Our Future", identified a number of options for augmentation of water supplies to Melbourne, including several diversions of streams within and adjacent to the proposed park; each of which would involve the construction of portals and tunnels within the park.

One possible water diversion site has been identified on the Acheron River, near White Hill (downstream of the park boundary). The water would be piped through a tunnel to the Maroondah catchment; such water would then be treated before entering the metropolitan supply system.

This proposal would require relocation of part of the popular tourist route - the Acheron Way, but would not necessarily seek closure of the area to the public. The Acheron valley is a popular recreation area and continued public access to the area is an important asset of the proposed park.

The volume of water that could be diverted from the Acheron River would be in excess of the capacity of the Maroondah Reservoir. Accordingly, the proposal includes an additional tunnel from the Watts River, within the Maroondah catchment, that would carry water from the Watts into the Yarra - Silvan

conduit. In this way water from the Acheron River would enter the Maroondah system and be treated; and untreated water from the Watts River (part of the closed catchment) would pass into the Silvan reservoir and thence directly into the supply system.

The Review document proposed an alternative to the above in which water from both the Acheron and the Watts would be diverted directly into the Yarra - Silvan conduit. Water that enters that conduit is required to be of very high quality because it is not treated before entering the metropolitan supply system. This alternative proposal would probably necessitate the closure of the upper Acheron valley to public access to protect the water quality. It would also involve some reduction in nature conservation values through flooding of part of the valley.

Another proposal, in which water would be diverted from Cement Creek into the Yarra - Silvan conduit, would possibly result in restrictions on recreational use of land within the proposed park along the Acheron Way and on the eastern fall of Mount Donna Buang - a very popular area for day-trippers from Melbourne.

None of these proposals are definite but are options of relatively low priority that have been advanced for consideration.

The Council's proposal for the Central Highlands park does not prevent future augmentation of Melbourne's water supplies but requires adequate safeguards to protect the significant nature conservation values and water quality in the area and that management of the area protects and enhances its recreational values.

Co-operative park management

The Council is proposing that this park should be managed co-operatively by the Department of Conservation and Natural Resources and Melbourne Water; with Melbourne Water continuing to manage the three catchments under its control and the Department of Conservation and Natural Resources managing the remainder.

In order to facilitate the development of a co-operative agreement and management plan for the park, the Council has outlined a series of principles as a basis for management. It is intended that these principles address the key issues associated with management of the park.

They do not preclude the managers from addressing other issues considered to be important.

Principles for park management

- * Management priorities should be the continued protection of the very high conservation values of the park together with the protection of water quality and yield.
- * Continued high priority should also be given to fire prevention and control to protect water quality and yield. The policy of active co-operation with statutory fire fighting authorities should continue.
- * The land should be reserved as a single area under the appropriate legislation, but the on-ground management should continue as at present; that is, Melbourne Water continues to manage the water supply catchments and the Department of Conservation and Natural Resources manages the balance.
- * A co-operative agreement on the management of the park should be drawn up between Melbourne Water and the Department of Conservation and Natural Resources to recognise both the on-ground requirements and the working relationship between the two and should form the basis for the preparation of a detailed plan of management for the park. A draft plan should be published and public comment sought prior to the publication of a final plan which should be completed within two years of the park being placed on a schedule of the *National Parks Act 1975*.
- * Should any dispute arise in relation to the management of the park, a final determination should be made jointly by the Minister for Natural Resources and the Minister for Conservation and Environment.
- * Field staff of both Melbourne Water and the Department of Conservation and Natural Resources should have the same powers in relation to enforcement responsibilities. Reciprocal arrangements with respect to carrying out those responsibilities should be established.

- * Priority should be given to developing a comprehensive program to control exotic flora and fauna.
- * While control of public entry to the water supply catchments should continue, to reduce the risk of contamination of water supplies and the possibility of fire, the land managers should explore new opportunities for pedestrian-based recreation throughout the park. They should also explore the opportunities for other recreation facilities, including camping areas outside the present water supply catchments. Additional public vehicular access to the current water supply catchments should not be permitted, although access for disabled people to examples within the park of its key features should be provided. Recreational hunting should not be permitted in the park.
- * Where catastrophic events (such as wildfire) kill or damage areas of forest, salvage logging should not be permitted, in order to permit natural processes to occur.
- * Melbourne Water should continue its program of catchment hydrology research into all aspects of forest management as they affect stream values and, as appropriate, incorporate the research results into catchment management policies.
- * Research activities by *bona fide* research institutions should continue to be permitted where the proposed activities do not conflict with protection of water quality or yield or maintenance of conservation values.
- * Should future augmentation of water supplies to Melbourne require the construction of facilities within the park, this should be permitted provided adequate safeguards are implemented to protect significant conservation values and water quality and that management of the area protect and enhance the recreational values.

The priority of listing of the elements of the following recommendation recognises that the principal function of the catchments is to provide water.

Central Highlands National Park

Recommendation

A7 That the area of 69 800 ha indicated on map A be used to:

- (i) supply water and protect catchments and streams
- (ii) conserve and protect natural ecosystems
- (iii) protect sites of cultural importance
- (iv) consistent with (i), (ii) and (iii) above, provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments

that

- (v) the results of hydrological research that would achieve positive benefits for both water yield and protection of the natural values be incorporated in the management plan
- (vi) the timing, location, nature and intensity of scientific, educational and recreational use be subject to joint agreement between Melbourne Water and the Department of Conservation and Natural Resources
- (vi) harvesting of forest products not be permitted
- (vii) grazing by domestic stock not be permitted
- (viii) exploration for and extraction of earth resources not be permitted
- (ix) commercial or recreational hunting not be permitted
- (x) no new public vehicular access be provided within the water-supply catchments

that

- (xi) on the basis that Melbourne Water continues to manage the water supply catchments areas and the Department of Conservation and Natural Resources manages the balance of the park, the two agencies should jointly prepare a management plan and co-operative management agreement which accommodates the principles outlined above
- (xii) an Advisory Committee, comprising representatives from Melbourne Water, the Department of Conservation and Natural Resources and community interest groups be established to co-ordinate the preparation and implementation of the management plan

and that the area be included on a schedule to the *National Parks Act* 1975 with specific recognition in the Act of the Co-operative Management Agreement.

Notes:

1. The area for the park stated above does not include the four enclosed Reference Areas (B3, B4, B5, B6) which total a further 3760 ha.
2. Two residences at Cambarville (included in the proposed park) are occupied under annual licences issued under the *Forests Act* 1958. These licences should apply only to the current licensees and not be transferred.
3. Lake Mountain and Mount Donna Buang Alpine Resorts, both included in the proposed park, are on the Schedule to the *Alpine Resorts Act* 1983. It is proposed that these areas be deleted from the Schedule to the Act (see Chapter I - Alpine Resorts - Recommendations I8 and I9).
4. The O'Shannassy Lodge (O'Shannassy Country Resort), within the park near Warburton, is privately leased through the Victorian Tourism Commission and operates as a convention centre.

Other areas suggested for inclusion in the Central Highlands park

The Council received a number of submissions for a more extensive park in the Central Highlands, principally that suggested by the Victorian National Parks Association. That suggestion sought to incorporate most of the existing parks and nature conservation reserves in the region, as well as the Melbourne Water catchments and other areas of biological and recreational importance, within a single park of some 379 000 ha - encompassing about 56% of the total public land in the study area.

The park proposed by the Council is considerably smaller than that suggested by the conservation groups to ensure that sufficient timber resource is available to meet the needs of the timber industry. Council's consideration of the larger park proposals also revealed that the implications for the timber industry would amount to more than the loss of ash timber resources: they would also mean a significant reduction in log size towards the end of the current licence period, and a larger proportion of the logs supplied would need to be mixed species to maintain sustainable yield levels. Furthermore, the current park proposal is judged to contain adequate representation of those major land types and vegetation and faunal communities previously lacking in the reserve system.

The Council also investigated the possibility of linking the proposed Central Highlands park with the Baw Baw National Park as well as other options such as not recommending a new large park in the region; of Melbourne's water supply catchments, alone, being considered as nature conservation reserves; and other variations of the above proposals.

The proposed Central Highlands park, together with other existing and proposed parks and reserves, contains a wide and comprehensive representation of the diverse and important plant and animal communities and other major natural and cultural attributes of the Central Highlands. The inherent values of the water supply catchments are also recognised in the proposed recommendations.

The Council considered the extent of representation of the important values within the existing and proposed park and nature conservation reserve system, the additional provisions in these proposed recommendations for protection of particular values, and the provisions available for the protection of values through the Code of Forest Practices and under the provisions of the *Flora and Fauna Guarantee Act 1988*. On balance, it believes that further substantial representation of biological values within the park and nature conservation reserve system, beyond that now proposed, is not warranted, bearing in mind the other mechanisms in place to protect such values.

STATE PARKS

A State park is defined as:

An area of public land, containing one or more land types, set aside primarily to provide public enjoyment, education and inspiration in natural environments.

State parks should include samples of major land types not already represented in national parks and, as in national parks, the conservation of native flora and fauna would be an essential feature of management. Interpretative services would be provided. Development of facilities would be limited to a very small portion of the park. Activities would largely consist of sightseeing and the observation of flora, fauna and other natural features. State parks recommended by the Council are intended to complement the national parks so that, together with coastal parks, they form a State-wide system.

A Coastal park is defined as:

An area of coastal land, usually linear in shape and comprising the coastal reserve and adjoining public land, which has natural features, flora and fauna that give it particular landscape and conservation significance.

Coastal parks are equivalent to State parks in terms of their values, uses and forms of management, except that they tend to be linear in shape. They include areas of conservation significance due to the occurrence of remnant vegetation, particular plant associations, or important faunal species and usually include small areas that are intensively used for recreation. It is necessary to zone coastal parks to provide for the continuation of recreational pursuits while ensuring that the natural attributes are protected.

As well as the recommendation below that applies to all the existing and proposed State

and coastal parks and their additions, specific recommendations may apply to each of them;

these are listed in the respective park recommendations below.

STATE PARKS

Recommendations

A8 - A22 That the areas described below be used to:

- (i) conserve and protect natural ecosystems
 - (ii) protect sites of cultural importance
 - (iii) supply water and protect water catchments and streams
 - (iv) provide opportunities for recreation and education associated with the enjoyment and understanding of natural and cultural environments
- that
- (v) apiculture be permitted on traditionally licensed sites and the number of sites maintained subject to park management requirements
 - (vi) harvesting of forest products not be permitted
 - (vii) grazing by domestic stock not be permitted
 - (viii) exploration for and extraction of earth resources not be permitted
 - (ix) hunting and the use of firearms not be permitted

and that, except for A22, they be included in a schedule to the *National Parks Act 1975*.

EXISTING STATE PARKS

A8: Cathedral Range State Park

The principal features of this park are the highly scenic, rocky, razor-back ridge of the Cathedral Range, the gorge of the Little River as it drops from the Cerberean Plateau, and the river flats downstream. The park is a particularly popular venue for camping, walking and rock-climbing and contains the historically significant Cooks Mill tramway, segments of which are intact and some carriage bogies and a gantry remain.

The park is considered to be of State botanical

significance based on the diversity and undisturbed nature of the vegetation communities which range from montane damp (alpine ash) forest to dry sclerophyll forest. They include wet sclerophyll (mountain ash) forest, small areas of cool temperate rainforest, damp sclerophyll (messmate) forest and riparian forest. Also present are rocky outcrop scrub, shrubby (herb-rich) foothill forest of messmate and narrow-leaf peppermint, and heathy dry forest of broad-leaf peppermint.

This park was approved by the government following publication of the final recommendations for the Melbourne Area in January 1977.

Cathedral Range State Park

Recommendation

A8 That the area of 3600 ha, indicated on Map A, be used in accordance with the general recommendation for State parks outlined above.

A9: Eildon State Park

The main features of this park are the scenic, steeply dissected Mount Enterprise and Rocky Spur, together with the recreational attraction of Lake Eildon - used essentially as a storage for irrigation water.

The park is considered to be of State botanical significance and the vegetation communities it contains grade from dry sclerophyll forest, heathy dry forest, and herb-rich foothill forest in the lowland areas to damp sclerophyll forest and riparian forest to the south.

Abandoned mines in the park contain colonies of the common bent-wing bat and eastern horseshoe bat and the drier forests are habitat for the brush-tailed phascogale and the powerful owl.

In its 1977 recommendations, the Council provided for the continuation of the existing mining exploration leases; these leases have expired and no new ones will be issued.

Also in its 1977 recommendations, the Council delineated a 200 m buffer strip between the park and the full supply level of Lake Eildon to be reserved for water supply purposes and managed by the (former) State Rivers and Water Supply Commission (SRWSC) with the agreement of the (then) National Parks Service in relation to management policies. The catchment to Lake Eildon has been proclaimed under section 22(1) of the *Soil Conservation and Land Utilization Act* 1958. The water is used largely for irrigation but also for power generation and some domestic use.

More recently, in its 1983 recommendations following the Special Investigation of the Alpine Area, and in relation to the Dartmouth addition to the Alpine National Park system, the Council included the buffer to Lake Dartmouth (also a reservoir built largely for irrigation water) within the park. In recognition that the buffer was responsibility of the Commission, the Council required that the buffer be managed in accordance with established policies under an agreement between the SRWSC and the National Parks Service. Areas within the buffer immediate to SRWSC structures were to be excluded from the agreement and managed by the Commission.

The Council is proposing that the Eildon State park should similarly extend to the full supply level of Lake Eildon, with an agreement between the Rural Water Commission and the Director of National Parks for the land within the 200-m buffer, which would remain as an overlay within the park. Further, the Council believes that the Director of National Parks and the Rural Water Commission should enter into an agreement over the management of the land between full supply level and the actual water level of the lake; which varies seasonally. This will provide consistency in management and regulation of the use of the dry-land areas of the lake surrounds, particularly as the focus of use of the park is the lake and recreational activities on the lake can impact on the surrounding park.

Recreational hunting in parks reserved under the *National Parks Act* 1975 is generally not permitted, although specific legislative provisions have been enacted to permit hunting in some parks. Deer hunting by stalking is currently permitted seasonally in the Big River section (about 18 000 ha) of the Eildon State Park, which supports a high population density of sambar deer. In accordance with Recommendation A8 - A22 (ix) above, the Council is proposing that deer hunting no longer be permitted within the park.

The adjacent section of State forest within the Central Highlands Sanctuary similarly supports a high density of deer. The 223 000-ha Sanctuary was originally set aside to protect "game" (including deer) and "native game", such as native ducks. Council considers that the Sanctuary is no longer relevant nor necessary for the protection of deer and is proposing that the Sanctuary no longer apply (see Chapter E - Timber Production and State Forest). Taking into account those parts of the Sanctuary within existing and proposed parks and reserves, some 150 000 ha remains within State forest and, under these proposed recommendations, would become available for hunting. Council further proposes (see Recommendation E8), as an alternative to the area previously available in the park, that an area of some 20 000 ha adjacent to the Eildon State Park be available for hunting by stalking only.

The Eildon State Park was approved by the government following publication of the final recommendations for the Melbourne Area in January 1977.

Eildon State Park

Recommendation

A9 That the area of 29 500 ha, indicated on Map A, be used in accordance with the general recommendation for State parks outlined above

that

(x) land to the full supply level of Lake Eildon, totalling some 5 500 ha be added to the park

and that

(xi) the Director of National Parks and the Rural Water Commission enter into an agreement over the management of the land extending to 200 m above full supply level and between full supply level and the actual water level of Lake Eildon at any time.

Notes:

1. Extending the boundary of the park to full supply level of Lake Eildon, under Recommendation A9(x) above, will increase the area of the park to some 35 000 ha.
2. The threatened species - leafy greenhood (*Pterostylis cucullata*), is located within the present 200 m buffer to Lake Eildon. This species should be protected regardless of the outcome of the proposal to include the buffer in the park.
3. In accordance with Recommendation A8 - A22 (ix) above, hunting and the use of firearms will not be permitted in the park.
4. The land extending to 200 m above the full supply level of Lake Eildon is subject to a Land Use Determination under the *Soil Conservation and Land Utilization Act 1958*.

A10: Fraser park addition to the Eildon State Park

Fraser National Park was proclaimed in 1957. It comprises portion of farmland that was purchased for, but which would not have been inundated by, Lake Eildon. It was the first new park to come under the control of the newly formed National Parks Authority and was named after its first Chairman.

The park overlooks Lake Eildon and is popular for camping and hiking. In 1977, the Council recommended the 3750-ha area be a regional park in recognition of the opportunities it provides for informal recreation for large numbers of people.

The park contains a number of artefacts of the

mining and grazing eras, including an outstation building and stock yards which are relatively rare relics of 19th Century grazing history.

Some of the farmland that was included in the park was once cleared but extensive revegetation with native plants is occurring as a result of rabbit control and the removal of grazing in addition to planting on the cleared areas. The small, isolated examples of box woodland in this area complement the range of vegetation communities in the Eildon State Park as a whole.

The addition of this area to the State park would provide consistent and complementary management of all park lands surrounding Lake Eildon.

Fraser park addition

Recommendation

A10 That the area of 3990 ha, indicated on Map A and including land to full supply level of Lake Eildon, be added to the Eildon State park and used according to the general recommendation for State parks outlined above and Recommendation A9 above.

Note: Extending the boundary to the full supply level of Lake Eildon adds more than 200 ha to the park.

A11: Warrandyte State Park

The Warrandyte State Park contains an impressive array of natural and cultural features close to Melbourne and provides enjoyment for many thousands of visitors each year. It was declared in 1975 and, at that time, incorporated the Pound Bend, Jumping Creek and Black Flat Reserves and covered some 135 ha.

In 1977, the Council recommended additional land upstream of the Jumping Creek confluence with the Yarra River be included in the park and, in recognition of its fragmented nature amid surrounding residential allotments, and its importance for land and water based recreation for large numbers of people, that it be reserved as a regional park. Downstream of the Jumping Creek confluence, and south of the Yarra River, the land falls within the City of Doncaster and Templestowe and is therefore outside the study area.

The park has been substantially increased in size through the acquisition of land and now covers 586 ha.

It contains five indigenous vegetation communities. In the eastern half of the park they remain largely intact and are considered to be of State botanical significance based on the high quality remnants of dry sclerophyll forest, valley forest and riparian forest, and the presence of the rare foothills spider-orchid (*Calandenia oenochila*).

The area supports habitat for the eastern grey kangaroo, swamp wallaby, platypus, brush-tailed phascogale and koala. Some 130 indigenous bird species have recorded here, including the endangered regent honeyeater.

Pound Bend tunnel (built in 1870) and the Warrandyte gold workings are considered to be of State historical significance. Anderson Creek was the site of the first reported gold discovery in Victoria and the Island, in the Yarra River, was created by the re-routing of the river by prospectors.

This park was approved by the government following publication of the final recommendations for the Melbourne Area in January 1977.

Warrandyte State Park

Recommendation

A11 That the area totalling 270 ha, indicated on Map A, be used in accordance with the general recommendation for State parks outlined above.

Note: This recommendation applies to that portion of the park within the study area. An additional 320 ha falls within the City of Doncaster and Templestowe.

A12: Mount Lofty addition to the Warrandyte State park

Mount Lofty, a high ridge forming a peninsula with the Yarra River, is at the head of the Warrandyte gorge upstream of the present park. The land (88 ha) was acquired by Melbourne Water as part of the now defunct Yarra Brae Reservoir project but is managed as part of the park. It was formally farmland and

is largely cleared, but revegetation is occurring.

The Yarra River can be seen from the upper slopes of Mount Lofty and is highly scenic with a number of rapids as well as steep rock faces on its northern bank. A major river access point for canoeists is located on the upstream side of this area.

Mount Lofty addition

Recommendation

A12 That the area of 88 ha, indicated on Map A, be added to the Warrandyte State park and used according to the general recommendation for State parks outlined above.

A13: Dandenong Ranges State Park

Dandenong Ranges National Park was proclaimed in 1987. This park covers some 1920 ha and includes the former Ferntree Gully National Park, Sherbrooke Forest, and Doongalla Forest. The Dandenong Ranges State Park proposed in these recommendations comprises the existing Dandenong Ranges National Park as well as Kalorama Park and a large parcel of public land of some 1100 ha that includes the Olinda Forest and extends to Mount Evelyn and Montrose. In all, it covers some 3500 ha and consists of four large parcels of land that are linked by means of public-land corridors.

The government purchased the historic Doongalla estate in 1950 and Kalorama Park in the 1960s. Following disastrous fires in the 1960s, it instituted a land purchase program that has enabled it to acquire much of the land on the western and northern faces of the Dandenong Ranges to create manageable fire breaks.

The Council in 1977 recommended that an area of some 400 ha, which encompassed the then existing Ferntree Gully National Park (which was first reserved in 1881 and declared a national park in 1928), be a regional park. At the same time the Council recommended that three other major blocks of public land in the Dandenongs - Sherbrooke Forest, Doongalla Forest and Olinda Forest - together with a large number of smaller parcels of public land in the region extending east to Cockatoo, be included in a 3000-ha Dandenongs regional park.

By 1977, the former Melbourne and Metropolitan Board of Works had acquired land for a proposed additional water storage (Silvan No. 2) north of the existing Silvan Reservoir and abutting the Olinda Forest. In 1977, Council recommended that this land also be included in the Dandenongs regional park until it was required for water supply purposes.

Subsequent to the Council's 1977 recommendations, the government has acquired further land that provides links between the Ferntree Gully park and both the Doongalla Forest (Sassafrass corridor) and the Sherbrooke Forest (Upwey corridor), consolidated boundaries, and declared the Dandenong Ranges National Park (which includes parts of both of Council's previously recommended regional parks); acquired a large area of land in the Montrose - Mount Evelyn area; and

acquired smaller parcels of land that were part of inappropriate subdivisions (such as on steep unstable slopes at Olinda). Some \$9 million has been spent on this program to date.

Melbourne Water has also decided that the site of the Silvan No. 2 reservoir is surplus to requirements and new information has become available on the natural and social values and uses of land in the area.

Overall, the parcels of public land making up this proposed park complement each other and the State-wide system of parks in terms of representation of vegetation communities (those in the south, for instance, support wet sclerophyll forest while the northern areas support damp sclerophyll forest and foothill forest communities) and land systems, and in the provision of a range of recreational opportunities. The State park classification will ensure the protection of the important nature conservation values represented here while continuing to provide for the high recreational use that the areas receive.

Topography and land systems

The proposed park falls within the dissected uplands of the Eastern Victorian Uplands (geomorphic unit 1.1) and includes a number of land systems which are otherwise not represented, or only poorly represented, in the nature conservation reserve system.

The Dandenong Ranges consists largely of mountainous country formed predominantly from Upper Devonian volcanics, although Lower Devonian marine sediments underlie the slightly gentler eastern part of the Olinda section. The existing park and portion of the additional areas comprise stony loams (land system 1.1/Sv7₃) and red or brown earths (1.1/Sv8₁) derived from the volcanics, while the balance of the additional areas comprise red friable or shallow stony earths (1.1/Sv8₂ and 1.1/Sv8₃) also of volcanic origin, and red earths of sedimentary origin (1.1/Ss8₁).

Vegetation

The Doongalla, Sherbrooke and Ferntree Gully portions of the park support high quality examples of wet sclerophyll forest, damp sclerophyll forest, shrubby foothill forest, and the locally rare and depleted - dry sclerophyll forest community. These areas are considered to be of State botanical significance based on the quality of these vegetation communities, the large and high quality stands of cool temperate

rainforest here, and the presence of five rare plant species - pinkwood (*Beyeria viscosa*), foothills spider-orchid (*Caladenia oenochila*), slender tree-fern (*Cyathea cunninghamii*), clover glycine (*Glycine latrobeana*), and the netted brake (*Pteris comans*), and the two vulnerable species - green leek-orchid (*Prasophyllum lindleyanum*) and fairy lanterns (*Thysmia rodwayi*). In all some 350 species of indigenous plants have been recorded here.

The Olinda Forest, along with the site of the (now not required) Silvan No 2 reservoir, and the land at Mount Evelyn, are contiguous. They support representative examples of damp sclerophyll forest, riparian forest and heathy foothill forest and are considered to be of regional botanical significance.

The representation of vegetation communities in this proposed park complements that of the existing parks and nature conservation reserves of the region, including the proposed Central Highlands National Park.

Fauna

The Doongalla, Ferntree Gully, Sherbrooke, and Olinda portions of the proposed park support populations of the rare broad-toothed rat, powerful owl and sooty owl, as well as the tree goanna which is classed as threatened. The forests are also important for their representation of wet forest fauna and the high educational value they provide close to Melbourne. The lyrebirds here are of particular interest to visitors.

Recreation

The Dandenong Ranges are described as containing a 'significant mixture of images including forests, fern gullies, gardens, craft shops, small townships in the hills, lookouts with views, restaurants and tea houses, scenic drives, wild flowers, picnic and barbecue areas'. The area is a major attraction for tourism and receives over one million visitors a year. Its proximity to Melbourne makes it popular for day trips and visitors undertake a

wide range of activities. Sightseeing and picnicking, usually in association with pleasure driving, and nature-based and day walking activities are the most common; horse-riding is undertaken in some areas. All the major parcels of land making up the park are interlaced with walking tracks; public vehicular access is restricted to a number of roads surrounding and through the areas.

Specific features of particular recreational interest include Fiveways lookout and picnic areas at Kalorama Park, Burkes lookout, the Olinda Falls, and the tourist lookout, picnic area and restaurant at the Mount Dandenong observatory reserve.

Resource implications

Because the park comprises four separate parcels of land linked through narrow corridors, it has a considerable length of boundary in proportion to the total area. Sections of the park exhibit disturbance to the vegetation, mostly a legacy of the previous history as freehold, past timber extraction, and development of visitor facilities.

The close proximity to urban areas, the surrounding and inlier areas of freehold, and the purchased land have resulted in problems with invasion of the indigenous understorey vegetation by escapee garden plants. Domestic dogs and cats also impact on the lyrebird population. Fire prevention activities (principally on the western margin) involve a fuel reduction burning program and some removal of the understorey. The land manager will need to maintain an on-going program of pest plant and animal control.

None of the areas that constitute the proposed park are used for, or currently available for, timber production.

The proposed park falls within a region with potential for producing gold, tin, and tungsten but contains no identified commercial resources. No exploration or extraction tenements are current in the area.

Dandenong Ranges State Park

Recommendations

A13, A14 That the areas totalling 3500 ha, indicated on Maps A and B and listed below, be used in accordance with the general recommendation for State parks outlined above

(continued)

A13, A14 - Dandenong Ranges State Park (continued)

and that

- (x) the William Ricketts Sanctuary, the Mount Dandenong Arboretum and the R.J. Hamer Arboretum be included as special management zones within the park
- (xi) the extant early 20th Century recreational facilities of the former Ferntree Gully National Park be protected.

A13 The area of 1830 ha currently described on the schedule to the *National Parks Act 1975* as the Dandenong Ranges National Park.

Note: A further 90 ha of the existing park falls within the City of Knox and is therefore outside the study area.

A14 The additional areas, totalling 1600 ha, indicated separately on the maps.

Notes:

1. This proposal involves the transfer of most of the now redundant Silvan No 2 reservoir land from Melbourne Water to the Department of Conservation and Natural Resources. Some parts of this area have been modified such that the land is not considered suitable for inclusion in the park. Portion has been cleared and, since the 1930s, used as a flower farm (see Chapter N - Uncategorised Public Land).
2. The proposed park includes the northern parts of both the area known as the '40 acre Nicholas Paddock' and the former Yanakie homestead block, a departmental depot at Woolrich Road (to be a special zone within the park), and land adjoining Sherbrooke Road which was once leased by the former Burnham Beeches Estate (this area may continue to be used as a picnic area subject to protection of remnant eucalypts and restoration of the original horse-riding 'tan track' and associated planted corridor).
3. Legal access should continue to be provided to private land within and adjacent to this park.
4. The Mount Evelyn - Montrose portion of the park includes a number of small dams which provide water for the horticultural operations on the inliers of leasehold. This use may continue subject to the requirements of the land manager.

A15: Bunyip State Park

This park supports a rich flora and fauna. Vegetation communities include wet sclerophyll (mountain ash) forest, damp sclerophyll (messmate) forest, foothill (silvertop) forest, heathy woodland, riparian forest, swampy forest, riparian thicket, wet heathland, and swamp heathland. The heathlands contain the rare plants: gully grevillea (*Grevillea barklyana*), bristly shield-fern (*Lastreopsis hispida*), swamp bush-pea (*Pultenaea weindorferi*), long pink-bells (*Tetralochea stenocarpa*) and wiry bog-sedge (*Schoenus carsei*), as well as the vulnerable species - brickmakers saw-sedge (*Gahnia grandis*).

The wet heathland provides habitat for the swamp antechinus (classified as rare in Victoria).

The park lies within the dissected uplands of the Eastern Victoria Uplands (geomorphic unit 1.1). The soils are derived largely from granitic rocks of Upper Devonian origin and include the red and brown earths of the steeper country (land system - 1.1/Sg83) and the yellow duplex soils of the gentler slopes (1.1/Gg71). Yellow duplex soils have also developed on the clays of the alluvial plain of the Bunyip River (1.1/Pf74).

The park contains a large number of tracks and receives a significant level of recreational use, particularly for horse-riding, touring, picnicking, and bushwalking.

This park was approved by the government following publication of the final recommendations for the Melbourne Area in January 1977.

Bunyip State Park

Recommendation

A15 That the area of 13 700 ha, indicated on Map A, be used in accordance with the general recommendation for State parks outlined above

except that

- (x) grazing of domestic stock be phased out within one year of acceptance of these recommendations
- (xi) horse-riding be permitted at such times and sites as approved by the land manager.

A16: Gembrook park addition to the Bunyip State Park

This area was set aside by the Council in 1977 as the Gembrook Regional Park. Comprising about 2700 ha and lying adjacent to the south-western corner of the Bunyip State park, it is similar to the Bunyip park in both the vegetation communities it contains and in its recreational use. Management of the two areas to date has been complementary and this recommendation to combine the two will rationalise classification of the land.

It adds to the parks system a small representation of land system 1.1/Gv8₂, comprising gently-sloping country of red friable earths of volcanic origin.

In its 1977 recommendations, the Council provided for the continuation of low-intensity timber harvesting (principally firewood collection) within the regional park. This activity would no longer be permitted in the State park.

Gembrook Park addition

Recommendation

A16 That the area of 2700 ha, indicated on Map A, be added to the Bunyip State park and used in accordance with the general recommendation for State parks outlined above and Recommendation A15 above.

Notes:

1. The Australian Deer Association is licensed to occupy a 13-ha site in the south of the existing Bunyip State park to enable research projects into the ecology of sambar deer. Brighton Grammar school is licensed to occupy a further 2.5 ha as a school camp. These licences may continue subject to the requirements of the land manager.
2. A total of 334 ha in both the existing park and the proposed addition to the park is currently occupied by 15 grazing licences (in addition to the sambar research site) with a total grazing capacity of about 41 head of cattle. Under Recommendation A15(x) above, grazing of domestic stock will be phased out within one year of acceptance of these recommendations.
3. Bunyip River and a number of its tributaries, including Back Creek (all within the park) support habitat suitable for the re-establishment of populations of helmeted honeyeater.

A17: Moondarra State Park

The chief features of this park are the vegetation communities and examples of land types that have developed on the Tertiary and Palaeozoic sediments of the Moondarra Plateau - a section of the dissected uplands in the Eastern Victorian Uplands. The land systems here comprise 1.1/Gf7 - gently sloping country

of yellow duplex soils derived from clays, and 1.1/Ss8₁₁ - steep-sided hills of shallow stony loams of sedimentary origin. The park also extends into geomorphic unit 9.3 - representing the high terraces and fans of Gippsland on the South Victorian Riverine Plains and comprises gently sloping country with a variety of soil types including duplex soils derived from clays and sands (land system 9.3/Gfc7₂).

The park contains damp sclerophyll forest, heathy foothill forest, swampy riparian forest, wet heathland, swamp heathland, heathy woodland and riparian forest. Two rare plants - burnettia (*Burnettia cuneata*) and cliff cudweed (*Gnaphalium umbricola*), are found here.

The Council in 1977 indicated that, because of the location of the park in relation to the brown-coal open-cut mines, special plans for fire protection would be required for implementation by the land manager and the State Electricity Commission.

The park originally recommended by the Council in 1977 was reduced in size prior to its acceptance by government to exclude much of the land surrounding the Moondarra Reservoir which, at that time, was under the control of the Latrobe Valley Water and Sewerage Board (now the Latrobe Region Water Authority). That area was to remain as "uncommitted land, withheld from sale and remaining under present tenure and management until reviewed by Council" and was to be used to "maintain the stability of the land and its usefulness for all future possible uses".

Moondarra State Park

Recommendation

A17 That the area of 6500 ha, indicated on Map A, be used in accordance with the general recommendation for State parks outlined above.

Note:

This park is on the schedule to the *National Parks Act* 1975. However, 170 ha at Anderson Creek, in the south east, is not yet part of the park although it is being managed as if it were. The State Electricity Commission proposes to use this area at some time in the future as a dump for overburden from the open-cut coal mining. The Parks Act provides for the addition of this area to the park should it not be required for this purpose. Council's recommendation includes the Anderson Creek area.

A18: Addition of the Moondarra Reservoir environs to the Moondarra State Park

It is proposed that the park be expanded east to Jacobs Creek, as previously recommended by the Council, to provide further representation in the conservation reserve system of damp sclerophyll forest, heathy foothill forest, heathy woodland and swampy riparian forest.

The Tyers River catchment (which includes the Moondarra Reservoir) is subject to a Land Use Determination (LUD) under the *Soil*

Conservation and Land Utilization Act 1958. As the reservoir provides water for domestic consumption, the LUD identifies a buffer of 200 m above its full supply level for the protection of water quality. Under this recommendation, the Latrobe Region Water Authority would retain direct management of the buffer. Further, the complementary management of the park to protect water quality would, under Recommendation A18(x) below, extend beyond the area currently under the management of the Authority.

Addition to Moondarra State Park

Recommendation

A18 That the area of about 1700 ha, indicated on Map A and extending to within 200 m of the full supply level of Moondarra Reservoir, be added to the Moondarra State park and used according to the general recommendation for State parks outlined above

and that

- (x) the timing, location, nature and intensity of scientific, educational and recreational use of the park within the water supply catchment to the reservoir be subject to joint agreement between the Latrobe Region Water Authority and the authority managing the park.

A19: Mount Worth State Park

This area supports the only significantly large area of native vegetation in the western Strzelecki Ranges. It includes remnant wet sclerophyll (mountain ash) forest amongst a mosaic of regenerating vegetation. The scenic fern gullies here include two rare species: slender tree-fern (*Cyathea cunninghamii*) and skirted tree-fern (*C. marcescens*).

The park supports the only known occurrence on public land of the giant Gippsland

earthworm - a threatened species.

A number of waterfalls occur here and various points in and adjacent to the park provide scenic views across the Latrobe Valley and the Strzeleckis to the sea.

In its final recommendations for the Melbourne Area in January 1977, the Council recommended that some 200 ha here be a regional park. A larger area was subsequently reserves as a State park.

Mount Worth State Park

Recommendation

A19 That the area of 180 ha, indicated on Map A, be used in accordance with the general recommendation for State parks outlined above.

Note:

An additional 860 ha lies outside Melbourne Area, District 2 as a result of the declaration of the Rural City of Warragul.

A20: Arthurs Seat State Park

Arthurs Seat, named after a mountain near Edinburgh - England, comprises a prominent granite massif overlooking Port Phillip Bay near Dromana on the Mornington Peninsula.

Land was first reserved for public purposes here in 1863 and the area was declared a State park in 1988. It includes a number of areas on the western and northern escarpments that have been acquired by government. Urban development fringes most of its western side.

The park comprises a moderately dissected ridge formed from Devonian granite in the South Victorian Uplands and consists of one land system - 3.3/Sg7; providing its only representation in the parks system.

The important nature conservation values of the park stem from it supporting one of the few large remnants of native vegetation on the Mornington Peninsula. The park contains representative examples of coastal grassy forest and heathy woodland. The endangered species - purple eyebright (*Euphrasia collina* ssp. *muelleri*) and the vulnerable species - clover glycyne (*Glycyne latrobeana*) occur here.

The area is within a 'Scenic Area' declared by the Governor in Council in 1969 and has high landscape values, as it overlooks the southern Mornington Peninsula, and provides commanding views of Port Phillip Bay and the Mornington and Bellarine Peninsulas.

Seawinds, a 34-ha property near the summit of Arthurs Seat, was first taken up over 100 years ago and was purchased by the government in 1975. It consists of formal gardens and lawns, which include sculptures by William Rickets, as well as grazing paddocks.

Walking tracks traverse the area and provide access to "Lookout Hill" (providing views towards Melbourne) and Kings Falls (a cascade on the south-western slopes). The park features a number of scenic lookouts. Recreational facilities include a chairlift to Arthurs Seat in the north of the park and picnic areas at the summit and at Seawinds. The remainder of the park provides opportunities for bushwalking.

This park was part of the Cape Schanck - Arthurs Seat Regional Park approved by government following publication of the final recommendations for the Melbourne Area in January 1977.

Arthurs Seat State Park

Recommendations

A20, A21 That the areas totalling 170 ha, indicated on Map A and described below, be used in accordance with the general recommendation for State parks outlined above

and that

- (x) arrangements be made under the leasing provisions of the *National Parks Act 1975* for the continued operation of the chairlift.

A20: The existing Arthurs Seat State Park (130 ha approximately).

A21: The areas totalling 40 ha indicated separately on the map.

Note:

Negotiations should continue between the Department of Conservation and Natural Resources and the Shire of Flinders with a view to ensuring complementary management of adjacent municipal lands. (Council is aware that an area of some 145 ha, comprising Shire freehold and land held by a philanthropic trust, may be added to the park in the future.)

NEW STATE PARK

A22: Phillip Island

The proposed Phillip Island Coastal Park incorporates the southern coastline of Phillip Island, Rhyll Inlet, Rhyll Swamp, and Churchill Island. Although the future status of the intertidal flats of Swan Bay between Rhyll and Newhaven will be investigated in the context of the whole of Western Port during the Marine and Coastal Special Investigation, the Council nevertheless has included them at this stage in the proposed park.

Council's recommendations in 1977 provided for a number of wildlife reserves on the island, the majority of which are now included in the proposed coastal park.

Since 1977, the government has acquired additional land in a number of locations on the island. These include areas on the Summerland Peninsula (where a buy-back program is current); adjacent to the Penguin Reserve; abutting the Bass Strait coast between Berry Beach and Storm Bay; seaward of the Sunderland Bay and Surf Beach housing estates; abutting Rhyll Swamp; on Churchill Island and at its bridgehead on Phillip Island; and land acquired for the establishment of the Koala Conservation Centre.

As described below, public land on Phillip Island contains a wide range of natural, cultural and recreational values. The Council believes that the integrated management of

these values is best achieved by including them within the one reserve and considers that a coastal park is the most appropriate category. Further, because of the diversity of recreational uses in the area and the high level of management provided by the current Committee of Management, the Council considers that the continued management by that Committee is best facilitated by the reservation of the land under the *Crown Land (Reserves) Act 1978*.

Topography and land systems

Phillip Island comprises an original larger central island to which two smaller islands have become attached at its south-west and south-east extremities to form peninsulas. To the east, the granitic Cape Woolamai is linked to the basalt main island by high sand dunes; the basaltic Point Grant to the west is similarly linked to the main island by sand.

In the west, Point Grant and the Summerland area, both within the proposed park, comprise a low basaltic plateau bounded by precipitous bluffs. The high, steep Bass Strait coastline, also within the park, provides exposures of the underlying basalt as cliffs and rocky shore platforms up to 100 m wide.

The cliffs of the Cape Woolamai granite massif in the east are amongst the highest on the Victorian coast, rising abruptly to almost 100 m. They contain deep gorge-like clefts and gutters developed along steeply dipping joints in the granite, and the presence of sand dunes

aligned along these joints is unique in Victoria. Serrated rock stacks fringe part of this coast and are isolated from the cliffs at high tide. Granitic coastlines are uncommon in Victoria, although they are well represented in the Wilsons Promontory National Park.

The Bass Strait coast is exposed to high energy swell and storm wave action and contrasts markedly with the more sheltered environments of the Island's northern shoreline facing Western Port. Here, a broad sandbank has partially filled a shallow embayment to form Rhyll Inlet and its broad intertidal flats. Inland of Rhyll Inlet is the freshwater Rhyll Swamp - a former embayment that was isolated from the sea by sandy beach ridges some 6000 years ago.

Between Rhyll and Newhaven, and surrounding Churchill Island (an outlier of the basaltic plateau), are the extensive Swan Bay tidal flats. This embayment is sheltered from the main southerly and westerly wind-generated waves and the mud flats are drained at ebb tide via an intricate branched hierarchy of scour channels.

Rhyll Swamp is included in the proposed park and the Council is of the opinion that the Rhyll Inlet complex and the Swan Bay tidal flats should also be included in the park, but this issue will be resolved during the Marine and Coastal Special Investigation.

The proposed park includes representation of two geomorphic units of southern Victoria: the Mornington Peninsula series of moderately dissected ridges of the South Victorian Uplands (geomorphic unit 3.3) and the barrier complexes of the South Victorian Coastal Plains (geomorphic unit 8.5). In the former, the soils developed on the Tertiary basalt are either red friable earths (land system 3.3/Gvf7₂), as on Churchill Island, or clays or yellow duplex soils (3.3/Pvf7₁ and 3.3/Pf7₂); the small area of exposed Devonian granite at Cape Woolamai is described by land system 3.3/Sg7. The unconsolidated sand dunes of the coastal plain are represented by land systems 8.5/PCc7₃ and 8.5/PCc7₄. The land systems on the basalts are poorly represented in conservation reserves elsewhere in the State.

Cape Woolamai and its sandy isthmus with the main island are considered to be of national geomorphological significance, based on the unusual example here of the multiple processes that shape dune sands and its classic example of a former island now linked to a larger land mass. Of national significance too is the coast

from Thorny Beach to Native Dog Creek where one of the best exposures of Early Tertiary volcanic sequences in Australia is located. Sites of State significance include Rhyll Inlet - a tidal inlet (as distinct from an estuary) with a complex array of active and relict features; the exposure of volcanic tuffs at McHaffie Point; an exposure of several lava flows at Point Grant and The Nobbies; an example of stages of reclamation of the former seaway at Swan Lake; dykes intruding the basalt platform at Kitty Miller Bay; Storm Bay and Pyramid Rock where the contact between the volcanics and the pre-volcanic (granitic) land surface is evident; and a quartzite ridge at Smith Beach.

Vegetation

The land surrounding Rhyll Inlet supports coastal saltmarsh, coastal banksia woodland, coastal grassy forest, coastal dune scrub and swamp scrub. The Bass Strait shoreline supports coastal dune scrub and a community that is rare in Victoria - coastal tussock grassland (which is far more common on the islands of Bass Strait). This south coastal section of the park supports a rare plant species - coast ballart (*Exocarpus syrticola*) and two vulnerable ones - shore spleenwort (*Asplenium obtusatum*) and crimson berry (*Cyathodes juniperina*).

Fauna

The southern coastline of the proposed park supports the largest nesting colony in the State of the short-tailed shearwater - a significant species which breeds exclusively in Australia (small colonies are also found on French Island and on the off-shore islands of Wilsons Promontory). It also supports the second largest breeding colony of the little (or fairy) penguin - another significant species and the only penguin to breed in Australia (the largest colony is on Gabo Island - off the East Gippsland coast). Breeding colonies of the hooded plover are also found here.

The tidal flats of Swan Bay and Rhyll Inlet form part of the more extensive Western Port site of importance for wading birds which is listed on the Ramsar Convention (convention on wetlands of international importance - especially for waterfowl habitat) and the bird species are covered by agreements with Japan (JAMBA) and China (CAMBA).

More than 50 species of bird have been recorded from Rhyll Swamp. This area

supports a major breeding colony of royal spoonbill; large numbers of sacred ibis and straw-necked ibis also breed here as well as the little pied cormorant and some ducks, such as the musk duck and chestnut teal. The area also supports a small population of long-nosed potoroo.

Nine other species of mammals, including the water-rat, swamp wallaby, koala, echidna, and three species of bat are also recorded on the island.

In 1977 Council recommended that Swan Bay should be used for the conservation of wildlife and for commercial and recreational activities and that it be declared a Wildlife Management Co-operative Area. Since then, the primary water bird forage area has been classed as being of national zoological significance while the rest of the bay has been identified as of State significance for waders. Boat access to Rhyll and Newhaven pass through these areas.

Council considers that commercial and recreational fishing and boating should be carried out in a manner that is consistent with the protection of the area's nature conservation values. Council is of the view that the Swan Bay area would be a valuable addition to the Phillip Island Coastal Park but that issue will be resolved during the Marine and Coastal Special Investigation. Management provisions to ensure the protection and/or sustainable use of the marine resources of the area will also be addressed in that investigation.

Cultural

The proposed park includes a large number of Aboriginal archaeological sites, principally middens.

The first European agricultural crops grown in Victoria and one of the earliest buildings were in 1801 on the 57-ha Churchill Island. Extant historical features here include a homestead (structures range in date from the 1860s to 1982), a garden and many agricultural artefacts. Some very old - up to 500 years old - specimens of moonah (*Melaleuca lanceolata*) also grow here.

In 1891, a quarry was established at Red Point on the eastern shore of Cape Woolamai and produced pink and grey granite for facings on buildings in Melbourne. At the height of its operation, 300 people lived at the Cape. The 300-m long quarry is still evident along the

shore as is the remains, 20 m off-shore, of a jetty constructed from steel railway line.

Recreation

A range of opportunities for informal recreation are available on the western and southern shores including some of the best surf beaches in Victoria; particularly Woolamai Surf Beach which has a long established State and national reputation for consistently good waves in all seasons and tides. It has been a venue for both State and national competitions for many years and as such provides a significant contribution to the Island's economy.

The primary focus of the Penguin Parade, at the western extremity of the Island, is tourism and the site receives about 500 000 visitors a year, and up to 3800 a night. Interpretation of wildlife is also an important function of the Penguin Parade.

Car-parks, toilet blocks and other visitor facilities are located principally along the surfing beaches and at other popular sites, such as at Point Grant

Proposals under the current management plan include the construction of a new road to Point Grant which would reduce the impact that the present road has on the penguins while still providing continued access to the surfing beaches, as well as the construction of new visitor facilities at Flynn Reef, Cat Bay and Shelly Beach.

Council believes that the existing management and proposals for this area should continue and be provided for by appropriate zoning in the management plan for the park.

Colonies of short-tailed shearwaters lie close to main beach access points below the Sunderland Bay Estate and the Smiths Beach Estate.

Council believes that, with careful management, continued access to the beach should be compatible with the protection the nature conservation values of these areas.

At Cape Woolamai, an area containing a clubhouse of the Surf Life Saving Club Association, car-park and other facilities is currently managed by the Shire of Phillip Island. Following concern about the environmental effects of the access road to the site, the government determined that a new inland road should be constructed to the area through the centre of the sandy isthmus as well

as a new club house, toilet block and 300 vehicle car-park on the existing site.

As Churchill Island was freehold land in 1977, the Council made no previous recommendations for the area. It was subsequently purchased by the Victorian

Conservation Trust and, together with areas on the main island at the bridge head to the Churchill Island is now managed by the Director of National Parks under Section 19A of the *National Parks Act* 1975. This area is a valuable and complementary component of the proposed park.

Phillip Island State Park

Recommendation

A22 That the area of 1790 ha, indicated on Map A, be used in accordance with the general recommendation for State parks outlined above

except that

(x) the park be reserved under the *Crown Land (Reserves) Act* 1978

and that

(xi) the existing infrastructure at the Phillip Island Penguin Reserve and the proposed developments of visitor facilities at Cape Woolamai and Point Grant be provided for in park zoning plans

(xii) management of the Phillip Island Penguin Reserve remain with the Penguin Reserve Committee of Management

(xiii) consideration be given to delegating the management of other specific areas and establishing a community based advisory committee

Notes:

1. The future status of the Swan Bay area will be investigated in the context of the nature conservation values of the whole of Western Port during Council's Marine and Coastal Special Investigation. Management provisions to ensure the protection and/or sustainable use of the marine resources of the area will also be addressed at that time. This proposed recommendation highlights the important values of the area, but Council will take account of the broader study during consideration of the final recommendations. The area stated above does not include the tidal flats shown as part of the park on map A which comprise a further 2100 ha.

2. A draft 'Wildlife Strategy Plan for Phillip Island' includes assessment of the potential of the island's faunal values to facilitate opportunities for tourism. It also proposed that facilities be developed to enable the public to view the penguins (now completed), the koalas (being constructed), the short-tailed shearwater rookeries (possibly at Forrest Caves or Cape Woolamai), and the inter-tidal flats (possibly at Rhyll Inlet).

3. Hunting is not permitted in any of the existing wildlife reserves and will not be permitted in the park.

4. The boundary between the park and freehold should be accurately delineated to avoid problems with respect to grazing and clearing activities, particularly along the southern coastline.

5. Council notes a proposal for a walking track along the southern coastline.

6. Some of the recently acquired land in the Rhyll area will require revegetation.

7. Council is seeking suggestions on the future use of the fenced enclosure at Rhyll Inlet (which was previously used by the Serindip Research Station).

8. Council would support the manager making arrangements with the Shire of Phillip Island to recoup the cost of the proposed visitor facilities at Cape Woolamai.

REGIONAL PARKS

A Regional Park is defined as:

An area of public land, readily accessible from urban centres or a major tourist

route, set aside primarily to provide recreation for large numbers of people in natural or semi-natural surroundings.

These parks would be intensively developed for informal recreation and could include road systems. Although natural beauty would enhance their value, closeness to an urban centre is more important than natural

attributes. Other uses, such as mineral or stone extraction or timber harvesting, may be permitted where they are compatible with the primary use.

REGIONAL PARKS

Recommendations

A23 - A30 That the areas described below be used to:

- (i) provide opportunities for large numbers of people for informal recreation associated with the enjoyment of natural surroundings
- (ii) conserve and protect indigenous flora and fauna, and natural features consistent with (i) above.

EXISTING REGIONAL PARKS

A23: Wandong Regional Park

This area is readily accessible from Wandong and the Hume Freeway and contains scenic drives to Mount Disappointment and Strath Creek Falls. Use of this area will increase in the future as the projected increase in the population of Plenty Valley is realised.

The park includes part of the route of the timber tramway system which linked the Comet Mill (near Mount Disappointment) to Wandong, and includes "The Bump" incline on the line as well as the site of Harpers Mill. The tramway formations are still evident in

several places and would make serviceable walking tracks.

This park was approved by the government following publication of the final recommendations for the Melbourne Area in January 1977. At that time, the Council recommended that timber harvesting should continue "as an aid to the primary objectives".

A24: Addition to the Wandong Regional Park

This 150-ha addition to the park at White Elephant Gap would widen and enhance the park's recreational and camping opportunities.

Wandong Regional Park

Existing park

Recommendation

A23 That the area of 700 ha, indicated on Map A, be used in accordance with the general recommendation for regional parks outlined above.

Addition to park

Recommendation

A24 That the area of 150 ha, indicated on Map A, be added to the Wandong Regional Park and used in accordance with the general recommendation for regional parks outlined above.

A25: Lysterfield Regional Park

The former State Rivers and Water Supply Commission acquired suitable land in 1930 and completed construction of Lysterfield Reservoir in 1936. Subsequently, the Commission acquired most of the catchment to the reservoir to reduce pollution of the water. At the time

of Council's 1977 recommendations, Lysterfield Reservoir was still part of the water-supply system. Accordingly, it was set aside as a water production reserve under the management of the Commission.

Much of the catchment had been cleared and used for agriculture. Following its acquisition,

plantations of eucalypts (principally the non-indigenous spotted gum) were established and these now cover some 50% of the catchment. Remnant native vegetation covers a further 30%. When the nearby Cardinia Reservoir (see Recommendation D60) was completed and filled in the late 1970s, Lysterfield Reservoir was no longer required for domestic water supply. Following the recommendations of an interdepartmental committee of inquiry, the area was proclaimed a park under the *National Parks Act 1975* and was opened to the public in 1986. The reservoir is not used for water supply (indeed its water level has been maintained by purchasing water from the domestic supply system).

The park provides for both water-based and land-based recreation. Car-parking, boat

launching areas, artificial beaches, bird hides and walking tracks have been constructed.

The remnant native vegetation is dominated by an open forest of long-leaf box, broad-leaved peppermint and messmate, and a closed scrub along the drainage lines dominated by prickly tea-tree and scented paper-bark. A wide diversity of species of fauna has been recorded including a number of regionally rare, but itinerant, waterbirds. The area supports a small population of eastern grey kangaroo.

A26: Addition to the Lysterfield Regional Park

Council is also recommending the addition of an area of public land abutting the northern side of the existing park.

Lysterfield Regional Park

Existing park

Recommendation

A25 That the area of 660 ha, indicated on Map A, be used in accordance with the general recommendation for regional parks outlined above.

Note:

The western part of the existing park (comprising 580 ha) lies within the Cities of Knox and Berwick and is therefore not part of the study area. Nevertheless, this area is an integral part of the regional park.

Addition to park

Recommendation

A26 That the area of 120 ha, indicated on Map A, be added to the Lysterfield regional park and used in accordance with the general recommendation for regional parks outlined above.

A27: Crossover Regional Park

This park lies close to Melbourne, the Latrobe Valley and the Tarago River and features fern gullies and the old Warragul--Noojee railway.

The park was approved by the government following publication of the final recommendations for the Melbourne Area in January 1977.

Crossover Regional Park

Recommendation

A27 That the area of 330 ha, indicated on Map A, be used in accordance with the general recommendation for regional parks outlined above.

Notes:

1. An area licensed for occupation by a sawmill, in the east of Crown Allotment 8D, is not included in the park.

(continued)

A27 - Crossover regional park (continued)

2. Small softwood plantations located in the north-west of the park have been partially harvested and the land permitted to revegetate. Another small plantation is extant in the south-west. Following harvesting of the plantations, the land should be revegetated with indigenous species.
3. The township of Rokeby is contiguous with the western side of this park but within the Rural City of Warragul. The disused Warragul--Noojee railway and abutting public land within the township is partially vegetated and provides a continuum of public land between the park and the Tarago River - interrupted only by the main road to Neerim South. Council believes that this land should be managed as part of the park to provide for recreational access between the park and the river, and appropriate revegetation work undertaken.

A28 Tyers Regional Park

This park borders the Tyers River Gorge and is close to the population centres of the Latrobe Valley. It contains examples of riparian forest, heathy foothill forest, damp sclerophyll forest and dry sclerophyll forest.

The area originally recommended by the Council in 1977 as regional park was reduced slightly in size prior to its acceptance by government to exclude land adjacent to the Moondarra Reservoir which, at that time, was under the control of the Latrobe Valley Water and Sewerage Board (now the Latrobe Region Water Authority).

Specific recommendations for the park included that:

- (a) it supply water and protect catchments
- (b) development should encourage high-intensity use at suitable locations away from the Tyers Gorge area
- (c) protection of water supply installations receive particular attention
- (d) provision be made in the park for activities that complement an "environmental park" that was being developed on adjoining private land
- (e) that an area leased to the Scout Association be added to the park on expiration of the lease, but the Association should have continued access to the site.

In 1982, following its investigation of the South Gippsland Area - District 2, Council recommended that land in that study area be added to the park.

Tyers Regional Park

Recommendation

- A28** That the area of 1010 ha, indicated on Map A, be used in accordance with the general recommendation for regional parks outlined above.

Note:

An additional 810 ha of this park lies outside the study area.

NEW REGIONAL PARKS

A29: Plenty Gorge Regional Park

This proposal is for part of the Plenty Gorge Metropolitan Park which extends south along the Plenty River from Yarrambat to Janefield. The metropolitan park is being established as part of the program under Melbourne Parks and Waterways (a new separate enterprise under the Melbourne Water Corporation) to expand Melbourne's parks system. The program incorporates the former Open Space 2000 program undertaken in conjunction with

the Department of Conservation and Natural Resources.

Most of the park comprises the floor and adjacent moderate to steep slopes of the Plenty River valley which is incised into the largely basaltic plains landscape.

Although the main use of the park will be recreation, it retains important natural values, including the Plenty River and its gorge, wetlands, grassland areas, remnants of indigenous vegetation and geological features, as well as sites of historical and Aboriginal cultural importance.

The area supports valuable examples of dry sclerophyll forest and box woodland on the slopes. Riparian forest grows along the valley floor. Although under pressure from introduced plants and animals, some 410 native plants and 265 native vertebrate species have been recorded here.

Up to 500 swift parrots (20% of the Victorian population) - a species classified as vulnerable, the endangered regent honeyeater, and the rare grey goshawk, barking owl and brush-tailed phascogale have been observed in this area.

The key opportunity in the majority of the park is for passive recreation and education in the natural or semi-natural surroundings of the valley, although sports and club activities are undertaken at Yarrambat Park using developed facilities. A number of picnic areas are located

in the park, including at Yarrambat Park. A continuous pathway is envisaged for the whole length of the park.

Land included in the park is under various tenures - Crown land and Melbourne Water land (both of which are public land under the *Land Conservation Act 1970*), municipal land, and freehold land (which is classed as 'proposed public open space' under the local government planning schemes).

The Plenty River between Gold Street, Greensborough North and Bannons Lane, Yarrambat forms a boundary to the Melbourne Area, District 2, such that only land east of the river is in the study area. Land west of the river falls within the City of Whittlesea and is therefore not public land under the Act. Of the total area of the park of about 1400 ha, 115 ha is public land within the study area.

Plenty Gorge Regional Park

Recommendation

A29 That the area of 115 ha, shown on the map, be used in accordance with the general recommendation for regional parks outlined above and, along with the associated areas of parkland, be managed as part of the Plenty Gorge Metropolitan Park

that

- (iii) botanical and faunal habitat values be protected when development of the park for recreation is being undertaken

and that it be managed under the Melbourne Parks and Waterways program.

A30: Kurth Kiln Regional Park

Located between Woori Yallock and Gembrook, this park extends east from Kurth Kiln to Egg Rock and Basan Corner to include most of the catchment of Tomahawk Creek.

Kurth Kiln has been classified as of State historical significance. The large solid brick and concrete kiln was built during World War II to produce charcoal; it is the only one of its kind in the State. Other associated extant structures are workers' huts, the former manager's house (still occupied under licence), parts of water races and a dam.

The area also contains remnants of a number of pre-1939 sawmills and associated tramways.

Egg Rock is an extensive outcrop of granite rock that has been weathered to produce large tors and exfoliation sheets.

The proposed regional park supports a rich orchid flora and contains the rare plant - long pink-bells (*Tetratheca stenocarpa*) and two vulnerable species - tall astelia (*Astelia australiana*) and brickmakers saw-sedge (*Gahnia grandis*). These, and other important species should be protected.

Kurth Kiln is the main focus of recreational activity and informal picnic grounds have been established here. Other scenic sites include Egg Rock (which includes a fire tower) as well as the falls and a feature called 'Ship Rock' within Ewart Park, which also includes a picnic area.

The area is popular for touring, car-based camping and horse riding. Its natural and historic features also make it popular for walking and nature study. The close proximity

of the Scout Association's Gilwell Park ensures the regular use of the area by young people for activities like hiking and orienteering.

Kurth Kiln Regional Park

Recommendation

A30 That the area of 3470 ha, indicated on Map A, be used in accordance with the general recommendation for regional parks outlined above.

Notes:

1. The area falls within a region that is strategically important for fire protection and parts are subject to fuel reduction burning.
2. Important plant and animal species and sites and artefacts of cultural value should be protected.
3. The lower reaches of streams within this proposed park support habitat suitable for the re-establishment of helmeted honeyeater.

MARINE PARK

The Bunurong Marine Park was created by the Department of Conservation and Environment in late 1991. It straddles the border between Council's Melbourne Study Area and South Gippsland Area District 2 along the coastline at Cape Paterson.

The existing marine park extends a kilometre seawards from the shoreline and encompasses reefs and inter-tidal rock platforms which include pools and rock pinnacles. A diversity of marine life is found here. The draft management plan for the area has also included the adjacent narrow strip of coastal land and proposes the formation of a Marine and Coastal Park.

Subsequent to the Council commencing its investigation for the review of Melbourne Area, District 2, it was directed by the government to undertake an investigation of marine and coastal areas. Accordingly, those issues relating to the protection and/or sustainable use of marine resources will be covered by that new investigation. This will ensure an appropriate State-wide context for the consideration of the marine environment.

The existing Bunurong Marine Park is shown on Map A. Council is not making a recommendation about this area, and will review the appropriateness, boundaries, and tenure of a marine reserve in this area as part of its current Marine and Coastal Special Investigation.

YARRA VALLEY MULTI-PURPOSE PARK

Council's final recommendations in 1977 provided for the establishment of a 'Yarra Valley Multi-purpose Park' which encompassed the Maroondah, O'Shannassy and Upper Yarra catchments, most of the public land between Gembrook and Healesville, and land around Yarra Junction, Warburton, McMahon's Creek, Powelltown and Hoddles Creek. The recommendations set out a scheme of zoning of the park which included reference and education areas, and recreation, hardwood production, scenic landscape, and restricted (water supply) zones. Although the water-supply catchments were excluded from the proposed park by the government, the zoning of the balance of the area was approved.

As a consequence of its review of its land-use categories, Council no longer utilises the 'multi-purpose park' category. Sections of the original area recommended in 1977 as the Yarra Valley Multi-purpose Park are now proposed for inclusion in the Central Highlands National Park (Recommendation A7 above), as specific reserves - such as Reference Areas, Education Areas, Natural and Scenic Features (bushland) Reserves, as well as water production reserves which incorporate storage and diversion works. The previous 'intensive hardwood production' zone and much of the 'recreation and hardwood' zone are now included within State forest.

B. REFERENCE AREAS

Reference areas are tracts of public land containing viable samples of one or more land types that are relatively undisturbed and that are reserved in perpetuity. People concerned with studying land for particular comparative purposes may then refer to such areas, especially when attempting to solve problems arising from the use of land. Reference areas include typical examples of land types that have been modified elsewhere for productive uses such as agriculture, mining, or intensive timber production. The course and effects of human alteration and utilisation can be measured against these relatively stable natural areas.

In common with references and standards used in other fields, these areas must not be tampered with, and natural processes should be allowed to continue undisturbed. Reference areas should be sufficiently large to be viable and should be surrounded by a buffer, the width of which would vary according to the activity occurring on the adjacent land. The role of the buffer is to protect the areas from damaging or potentially damaging activities nearby. It will also protect important values in the surrounding land from potentially damaging natural processes occurring within the reference area.

Access should be restricted, and experimental manipulation should not be permitted. Setting aside such areas will enable continued study of natural features and processes: for example, fauna, hydrology, and nutrient cycling. These studies are important in increasing our knowledge of the ecological laws and processes on which humanity's survival may ultimately depend.

The preservation of some species in the long term requires the setting aside of areas free

from human interference (in the form of productive or recreational use of land). These areas preserve a valuable pool of genetic material. Wild species are often used to genetically strengthen inbred races of domestic plants and animals - and the future use of gene pools will probably expand far beyond this.

The *Reference Areas Act* 1978 provides for reference areas to be proclaimed by the Governor in Council, and for the Minister to issue directives for their protection, control, and management. An advisory committee, established under the Act, assists the Minister. The selection of the reference areas in the study area is based on current knowledge of the land types, and additional areas may be needed as better information on ecology and land use problems becomes available.

As a result of the declaration of the municipality of Whittlesea as a city, the Joey Creek, Yan Yean (north) and Yan Yean (south) Reference Areas (identified in 1977 as B9, B10 and B11) and the bulk of the Disappointment Reference Area (B8 in 1977), that were recommended by the Council in 1977, are no longer included in the current study. These areas are all located within land managed by the Melbourne Water Corporation. Their values will continue to be protected and they will remain as integral elements in the Statewide system of reference areas.

The new reference area listed below is described in terms of the vegetation types and land systems it represents. The land systems descriptions incorporate symbols that correspond to those set out in the report "Land Systems of Victoria" prepared by J.N. Rowan in 1990 for the Department of Conservation and Environment and the Land Conservation Council.

REFERENCE AREAS

Recommendations

B1 - B15 That the reference areas listed below:

- (i) be used to maintain natural ecosystems as a reference to which those concerned with studying land for particular comparative purposes may be permitted to refer, especially when attempting to solve problems arising from the use of land

(continued)

B1-B15 - Reference Areas (continued)

- (ii) be surrounded by a buffer, and that delineation of the buffer be by joint arrangement between the advisory committee and the land manager of both the area itself and of the land adjacent to the reference area

that

- (iii) activities (such as grazing, exploration for minerals, mining, timber harvesting, and beekeeping) that conflict with the purposes of a reference area not be permitted, and any such activities in the reference areas described below cease when these recommendations are adopted

and that they be proclaimed under the *Reference Areas Act 1978* and managed by the Department of Conservation, and Natural Resources.

Existing reference areas

These areas were approved by the government following publication of the final recommendations for the Melbourne Area in January 1977.

Existing reference areas

Recommendations

B1 - B10, B12 - B14 That the reference areas listed below and indicated on Map A, be used in accordance with the general recommendation for reference areas outlined above.

B1 Stony Creek (445 ha)

B2 Disappointment (part only) (190 ha)

Note:

The area proclaimed for this reference area is larger than that recommended by the Council in 1977.

B3 Watts Creek (890 ha)

B4 Deep Creek (1045 ha)

Note:

The area proclaimed for this reference area is larger than that recommended by the Council in 1977.

B5 Walsh Creek (945 ha)

B6 Mount Gregory (880 ha)

B7 Diamond Creek (420 ha)

B8 Bennie Creek (200 ha)

B9 Hawthorn Creek (415 ha)

B10 Baw Baw (80 ha)

B12 Eaglehawk Creek (290 ha)

B13 French Island (north) (195 ha)

B14 French Island (east) (200 ha)

Note:

The major part of the Disappointment Reference Area and all of the Joey Creek, Yan Yean (north) and Yan Yean (south) Reference Areas (approved by the government following publication of the final recommendations for the Melbourne Area in January 1977) are located within the City of Whittlesea.

Extension to the Baw Baw reference area

This extension adds to the representation of sub-alpine heathland and bog communities in the reference area system and enhances the viability of the Baw Baw Reference Area (B10 above).

Baw Baw extension

Recommendation

B11 That the area of 55 ha, indicated on Map A, be added to the Baw Baw Reference Area and used in accordance with the general recommendation for reference areas outlined above.

Additional reference area

B15 Pretty Creek (170 ha)

Altitude range: 220 m to 420 m

Climate: temperate to montane; mean annual rainfall of more than 700 mm

Land systems: Located in the dissected, Central Victorian Uplands (geomorphic unit 1.1). Brown earths on steep, hilly country on sedimentary soils (1.1/Ss8₁₁) and yellow duplex soils derived from finely-textured unconsolidated deposits on moderately sloping hills (1.1/Gf7).

Vegetation: Shrubby foothill forests with small areas of damp sclerophyll and wet sclerophyll forest.

Land system Gf7 is confined to the study area

and is found in both geomorphic unit 1.1 - part of the dissected uplands of the Central Victorian uplands, and geomorphic unit 3.4 - part of the dissected fault block of the South Gippsland Ranges. Within geomorphic unit 3.4, the occurrences of this land system are located in the moderately sloping hills between Yallourn and Grantville and are almost wholly within freehold land. As a result it is inadequately represented in conservation reserves in that geomorphic unit.

In geomorphic unit 1.1, land system Gf7 is located in both the existing Bull Beef fauna and flora reserve and the Moondarra State park. Its occurrence within this geomorphic unit is therefore adequately represented in conservation reserves, although it is not represented in a reference area. The importance of this proposed reference area rests in the representation it provides in the reference area system of land system Gf7.

Additional reference area

Recommendation

B15 That the area described above and indicated on Map A be used in accordance with the general recommendation for reference areas outlined above.

C. NATURE CONSERVATION RESERVES

Depending on the particular values under consideration and the potential land-use conflicts, protection or recognition of identified conservation values may be achieved through either their inclusion in the park system (see Chapter A), their inclusion in reserves that focus on the specific values, such as those described in this chapter, or through management prescriptions for State forest (Chapter E).

This chapter embraces the former categories of Flora Reserves, Flora and Fauna Reserves, and those former Wildlife Reserves where hunting was not permitted.

Flora and Fauna Guarantee Act 1988

The purpose of this Act is 'to establish a legal and administrative structure to enable and promote the conservation of Victoria's native flora and fauna and to provide for a choice of procedures which can be used for the conservation, management or control of flora and fauna and the management of potentially threatening processes'.

Under the Act, the Governor-in-Council (on the recommendation of the Minister) has the power to place on the Schedule of the Act - "list" - or "de-list" a species, community or eligible process, following advice from a Conservation Advisory Committee.

The Secretary of Conservation and Natural Resources must prepare a Flora and Fauna Guarantee Strategy; a draft of which was released for public comment in September 1992. Provision is also made for the amendment of this document by the Secretary.

The preparation of Action Statements, Management Plans and the Determination of Critical Habitats are also the responsibility of the Secretary who has the power to amend these as required. In the case of Action Statements, preparation and/or amendment requires consideration of advice given by the Conservation Advisory Committee and the Land Protection Council, and any other relevant nature conservation, social and economic matters.

The Minister has the power to make and revoke an Interim Conservation Order on Crown Land to conserve critical habitat. Such

an Order can operate for up to two years and must be renewed to remain in force beyond this period.

As with Forest Area Management Plans, the provisions of the *Flora and Fauna Guarantee Act 1988* do not provide the same level of protection as does the permanent reservation of areas under the *Crown Land (Reserves) Act 1978* or the *National Parks Act 1975*, and decisions to amend or revoke protection rest with the Secretary of the Department or the Minister, not the Parliament.

The *Flora and Fauna Guarantee Act 1988* has a degree of flexibility which may be necessary in the future to deal with many species about which little is known at present. In these circumstances, the creation of permanent reserves may not be appropriate, or it may be that not enough is known to be able to define a permanent reserve boundary at a particular point in time. In other cases, urgent action will be required and this Act provides a mechanism to do this, as well as applying to both public and private land.

Nature conservation in the study area

The Wildlife Branch and the Flora Survey Group of the then Department of Conservation and Environment synthesised existing data and undertook extensive field surveys on the flora and fauna of the study area and prepared comprehensive reports for inclusion in the Descriptive Report.

Subsequent to the publication of that Report, the Council has received supplementary reports describing sites of botanical significance and sites of high conservation value for fauna within the Melbourne Area, District 2.

In addition to the floristic and wildlife values of the parks that have been recommended in the Melbourne Area, District 2, a number of areas support indigenous vegetation with considerable floristic importance. Others areas are important not only for their floral values but also because of the significance of the wildlife populations and habitat they contain.

Council has recognised the special conservation significance of these areas and has accordingly recommended their reservation as flora

reserves or fauna and flora reserves. They are set aside primarily to conserve species that may be rare or endangered, and also other plant associations and animals that have particular conservation significance. Timber production from these areas would not be permitted.

In all such reserves, suppression of fires remains the responsibility of the Department of Conservation and Natural Resources. Appropriate fire-prevention measures such as maintenance of fire access tracks and protective burning will be carried out where necessary as will the control of vermin and noxious weeds.

In consideration of the degree of representation in potential nature conservation reserves of examples of vegetation communities and the habitat of important species of wildlife, the Council has also taken account of the extent to which those communities and habitats are already included in existing parks and reserves and the additions parks proposed in Chapter A.

Table 4 provides an indication of the degree of representation within proposed parks and nature conservation reserves of the various floristic vegetation communities of the study area compared with the existing situation.

Table 4
REPRESENTATION OF VEGETATION COMMUNITIES IN CONSERVATION RESERVES

Vegetation community	Total area (ha)	Proportional (%) Representation		
		Existing land use		Proposed land use
		Conservation reserves	Melbourne Water	Conservation reserves
Montane Dry Forest	9 900	1.2	0.0	1.3
Montane Forest	75 200	5.1	16.9	25.6
Montane Riparian Thicket	3 000	24.9	3.7	33.5
Cool Temperate Rainforest	2 375	2.0	46.0	62.5
Wet Sclerophyll Forest	114 000	4.6	22.1	29.0
Damp Sclerophyll Forest	157 300	7.9	9.7	18.5
Riparian Vegetation	29 600	10.7	7.8	21.1
Foothill Forest	182 700	15.4	4.0	20.9
Valley Forest	1 000	72.8	0.0	75.3
Heathy Dry Forest	16 900	15.6	5.1	20.0
Dry Sclerophyll Forest	39 900	46.5	0.0	47.4
Rocky Outcrop Scrub	200	100.0	0.0	100.0
Treeless Alpine Vegetation	1 800	78.9	6.9	86.4
Sub-alpine Woodland	8 000	63.3	0.0	69.8
Heathy Woodland	5 700	55.8	0.0	59.3
Wet/Swamp Heathland	3 200	82.8	0.0	86.8
Sand Heathland	5 000	73.2	0.0	92.2
Coastal Heathland	3 500	66.7	0.0	86.6
Coastal Grassy Forest	1 900	63.4	0.0	76.5
Dry Coast Complex	3 800	30.1	0.0	51.4
Wet Coast Complex	3 300	41.3	0.0	76.8
Swamp Scrub	1 000	53.8	0.0	72.5
Box Woodland	30	93.5	0.0	93.5
Plains Grassy Woodland	50	0.0	0.0	78.0
Floodplain Riparian Woodland	400	7.3	0.0	12.8

Notes:

1. Information provided by Geographic Information Systems (GIS) section of the Department of Conservation and Natural Resources; January 1993.
2. Areas of rainforest and other small, but important, communities are exaggerated in the GIS process. The figures in this table for rainforest are those derived from the Statewide Mapping of Rainforest Project by the Department of Conservation and Natural Resources.
3. Conservation reserves include national and State parks (Chapter A), reference areas (Chapter B) and nature conservation reserves (Chapter C).
4. Numbers are rounded.

Habitat corridors

The maintenance or establishment of corridors to link isolated populations of wildlife have been widely advocated as practical conservation measures to enhance wildlife conservation in disturbed environments. Linear corridor habitats can be identified in most landscapes: roadside strips of trees or streamside reserves surrounded by cleared farmland, streamside strips of native vegetation amidst pine plantations, or the narrow strips of riparian vegetation or rainforest along moist gullies in the extensive forests of the study area.

Essentially, the corridors through farmland or plantations are linear habitats that differ from a more extensive, surrounding matrix and provide continuity between populations in reserved areas to prevent their isolation and decline. Frequently, they link one or more patches of habitat in the landscape and may provide a pathway for animal movement; they may also occur as isolated lines of habitat. Their effectiveness for conservation depends upon:

- (a) their structure; that is length, the number and length of gaps, the number of junctions with other corridors, and the presence of "nodes" of habitat along the length
- (b) their functional connectivity; that is, the behaviour of the species utilising the corridor, the scale of the species'

movements, and their response to the structure of the corridor.

In the forests of the study area, the system of retained wildlife habitats includes nature conservation reserves and other reserves (such as the Melbourne Water catchments) as well as areas excepted from harvesting - because of steep slopes or because they are uneconomic for harvesting, buffer strips to protect water quality, sites of floral or faunal significance - such as rainforests, and a hierarchy of wildlife corridors in the areas used for timber harvesting.

Further, one of the options under consideration in the respective Forest Management Plans in the study area is a proposal to establish a series of "biolinks" between the major parks and reserves in the Regions. These biolinks, ranging from 300 to 1500 m in width, would also link with other areas of conservation value and would be exempted from timber harvesting. The network of wildlife corridors within the adjoining productive forest would also be retained.

One of Council's principal considerations when proposing to link the O'Shannassy, Maroondah, and Upper Yarra water-supply catchments to create the Central Highlands National Park has been the necessity to secure a range of forest types and ages and thus protect existing and potential, contiguous habitat - mainly of Leadbeater's possum, but also of other species that require intact older-aged and regrowth forests.

NATURE CONSERVATION RESERVES

Recommendations

C1 - C28, C30 - C51 That the areas described below and indicated on Map A be used to:

- (i) conserve and protect species or communities of indigenous animals and plants
- (ii) provide for educational and scientific study compatible with (i) above, and in ways which minimally affect the area

that, unless otherwise specified

- (iii) passive recreation such as nature study and picnicking by small numbers of people be permitted

- (iv) grazing, harvesting of forest products, hunting and the use of firearms not be permitted

that

- (v) exploration for and extraction of earth resources not be permitted

(continued)

C1 - C28, C30 - C51 - Nature conservation reserves (continued)

(vi) apiculture not be permitted except on traditionally licensed sites and subject to:

- (a) the outcome of research into the ecological impacts of this industry, and
- (b) management requirements

and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources.

FLORA

The description of the major vegetation communities in the Descriptive Report of the study area was based on analysis of floristic vegetation surveys. The intensity of sampling was sufficient only to identify and describe the major, common vegetation communities, however, and substantial variation in the structure and species composition of similar communities may occur from area to area. Nevertheless, this analysis has enabled a comparison of the values of respective areas and provided the basis for determining the extent of parks and nature conservation reserves.

Another important consideration has been the report and supporting data identifying sites of botanical significance. Those sites were determined by analysis of data collected during the range of studies undertaken in the region, from published reports, and from information from people with particular knowledge of botanically important sites.

Tall astelia

Tall astelia (*Astelia australiana*) is a member of the lily family. It is a robust perennial plant which can reach 2 m in height.

The species is endemic to, and extremely localised in, Victoria; being known from only two regions. Only 12 occurrences are known at the time of these recommendations; all within State forest. One colony has been found in Youngs Creek catchment in the Otway Ranges, near Lavers Hill. The balance are located in the Central Highlands, within the upper catchments of the La Trobe, Bunyip and Yarra Rivers. The species occurs primarily on alluvium in gullies within cool temperate rainforest dominated by myrtle beech.

Although there are about 11 occurrences of this

species in the study area, its rhizomatous habit leads to the formation of colonies and sometimes dense groves, making it difficult to distinguish individual plants, of which there may be only a small number.

Tall astelia is listed on Schedule 2 of the *Flora and Fauna Guarantee Act 1988* as a threatened species and is recorded as vulnerable for both the State and Australia. An Action Statement has been prepared under the Guarantee.

The extent of tall astelia has declined since European settlement, having been much reduced by successive fires. Its cool temperate rainforest habitat is highly sensitive to fire. Other threats identified in the Action Statement include invasion by weeds, myrtle wilt (which is a lethal fungal disease of myrtle beech and which could cause modification of the habitat), and direct damage such as might occur with accidental felling of a tree into a colony during timber harvesting or roading.

Concern is raised in the Action Statement that the establishment of extensive immature eucalypt forest (fire or logging regrowth) in the sub-catchments containing rainforest in which tall astelia is located, may affect the colonies' susceptibility to fire. This issue must be resolved as, to date, there is no clear evidence to either support or reject the contention.

Interim conservation areas

The Action Statement has identified one sub-catchment in each major watersheds in which tall astelia occurs which will be excluded from timber harvesting and maintained undisturbed for conservation and reference purposes until review of the Action Statement in 1996. These areas, representing the least disturbed in which the species is found, are Bjorksten Creek (La Trobe watershed), the upper section of Seven

Acre Creek (Bunyip Watershed), and a tributary to Tomahawk Creek (Yarra watershed).

The Action Statement sets additional prescriptions for the protection of other colonies of the species. In particular it specifies the establishment of extended buffers around each colony to improve their prospects of survival in case of fire, to avoid physical damage from tree felling, and to allow ecological development of the species.

In view of the detailed research into the ecology and habitat requirements of tall astelia being undertaken through the processes of the *Flora and Fauna Guarantee Act 1988*, Council believes that management of the species should be in accordance with the current and future Action Statements prepared under that Act.

Rainforest

The cool temperate rainforests in the Central Highlands are remnants of a much wider, ancient distribution of plant communities. They are now generally restricted to sheltered gully sites throughout the wetter, mountainous parts of the study area where fire frequency has been low and moist conditions have been maintained. This community also occurs in the Otway Ranges and East Gippsland.

The Department of Conservation and Natural Resources has conducted a detailed floristic study of rainforest as part of the Commonwealth-funded National Rainforest Conservation Program. That study provides valuable information about the extent of the community, the significance of particular stands and the distribution of rainforest species.

In the study area, the community is dominated by myrtle beech and southern sassafras, which typically form a more or less continuous dense canopy up to 40 m high. Scattered emergent eucalypts may be present. Blackwood may also form part of the canopy in some stands, but this species is also widespread in other vegetation communities.

The vegetation beneath the canopy includes tree-, ground-, and epiphytic ferns. Several rare plant species occur in some rainforest stands, notably tall astelia, oval fork-fern (*Tmesipteris ovata*), bristly shield-fern (*Lastreopsis hispida*), and Baw Baw berry (*Wittsteinia vacciniacea*).

Cool temperate rainforest occupies 2382 ha in the study area. The catchments controlled by Melbourne Water support 1102 ha (46% of the total), 7 ha are located on freehold land, while the existing parks and reserves contain 51 ha. Taking into account the proposals in this document, some 1484 ha (62% of the total) of rainforest in the study area now fall within existing and proposed parks and nature conservation reserves.

Provisions, through management prescriptions, for the protection of the other areas of rainforest are included in Chapter E - State forest (see Recommendation E4).

FLORA RESERVES

Flora reserves contain examples of indigenous vegetation with considerable floristic value in a natural or relatively natural state. They are set aside primarily to conserve species that may be rare or endangered, and other plant associations that are of particular conservation significance.

FLORA RESERVES

Recommendations

C1 - C20 That the following sites, indicated on Map A, which support species or associations of indigenous plants, be conserved and protected in accordance with the general recommendation for nature conservation reserves outlined above.

Existing flora reserves

- C1 Hughes Creek (110 ha)
- C2 Gobur (400 ha)
- C3 Yarck (580 ha)
- C4 Switzerland Range (490 ha)

- C5 McKenzie (40 ha)
- C6 Upper Beaconsfield (Critchley Parker Jnr Reserve) (35 ha)
- C7 Main Ridge (60 ha)
- C8 Kangerong (30 ha)
- C9 Buckley (30 ha)

C10 Hurdy Gurdy Creek (35 ha)

Note:

Council in 1977 recommended that this area should be a flora and fauna reserve.

C11 Nyora (24 ha)

Notes:

1. This area was considered by the Council, and subsequently declared a flora reserve, after Council's 1977 recommendations.

2. The historic railway dam in this reserve should be protected.

C12 Outtrim (4 ha)

Note:

A small addition to this area, being the balance of the former cemetery, is included.

Proposed new flora reserves

C13 Hughes Creek frontage (40 ha)

A representative example of river red gum floodplain riparian woodland located in an area where many other similar stands have been cleared or severely disturbed. This is an addition to the existing Hughes Creek flora reserve (see C1 above), which represents dry sclerophyll and herb-rich foothill forests.

C14 Tallarook (1.7 ha)

An area of dry sclerophyll forest with an intact understorey.

C15 Mill Creek (25 ha)

A representative example of riparian forest that extends downstream from the Tallarook State forest to Pulpit Rock. The significance of this site derives from the clearing or severe disturbance of similar vegetation communities in the area.

C16 Caveat (113 ha)

This area supports representative examples of riparian forest and herb-rich foothill forest. It includes herbfelds and mossbeds on outcropping granite boulders, a rare community. It was recommended as a bushland reserve (I30) in 1977.

Note:

Excluded from this reserve is 0.1 ha in the north-east corner, recommended as land not required for public purposes (see Chapter O).

C17 Yea River (32 ha)

This area has a valuable representation of riparian forest, including variants dominated by burghan (*Kunzea ericoides*), and foothill forest on a rise above the river. It was recommended as a bushland reserve (I27) in 1977.

C18 Jamieson River/Deep Creek (25 ha)

A population of the rare golden pomaderris (*Pomaderris aurea*) on the alluvial terrace, considered to be of State botanical significance, occurs here.

C19 Buxton Silver Gum Reserve (16.9 ha)

A relatively intact stand and the largest natural population of Buxton gum (*Eucalyptus crenulata*) - a species considered to be endangered in its natural habitat. This species is the subject of an Action Statement under the Flora and Fauna Guarantee. The site is considered to be of national botanical significance.

C20 Mount Bullfight (600 ha)

This area supports sub-alpine woodland of snow gum and small areas of wet sub-alpine heathland. The latter vegetation community is considered to be of State botanical significance because of the presence of the rare species - Gunn's richea (*Richea gunnii*). Small areas of older-aged alpine ash forest also occur within the reserve. The area receives a low level of use by bush walkers and cross-country skiers.

C21 Diamond Valley (1 ha)

Located on Orme Road, this area was fenced in the early 1980s and supports remnant dry sclerophyll forest with an intact understorey.

C22 Boomers Reserve (27.3 ha)

A representative stand of dry sclerophyll forest, which is considered to be of State botanical significance, containing rare and several regionally significant species.

C23 St Andrews (1.7 ha)

A good example of dry sclerophyll forest. It was recommended as a bushland reserve (I50) in 1977.

C24 Spadoni's Reserve - part (3 ha)

This area and the adjoining Yarra River frontage contain one of only two extant natural populations of Buxton gum (*Eucalyptus crenulata*), considered to be of national botanical significance.

C25 Baluk Willam (55 ha)

This land was purchased and set aside as a flora and fauna reserve subsequent to Council's 1977 recommendations.

Representative examples of shrubby foothill forest, damp sclerophyll forest, and small areas of wet sclerophyll forest and heathy woodland dominated by silver-leaf stringybark (*Eucalyptus cephalocarpa*). Some 170 plant species have been recorded here. The area is considered to be of State botanical significance and many of the plant species are not represented in any other biological reserve in Victoria.

C26 Beaconsfield Reserve (38.3 ha)

Representative occurrences of swampy riparian forest and swamp scrub, the latter community being particularly depleted and poorly reserved elsewhere. A number of regionally significant plant species occur here. This area was recommended as a bushland reserve (I63) in 1977.

C27 Mount Martha Park (54 ha)

Grassy woodland of snow gum and rough-bark manna gum, swamp gum woodland, and a grassy woodland complex with drooping sheoke.

It is thought that much of the original vegetation here was cleared in the 1860s and has since regenerated; indigenous tree species have also been planted. The area also includes an arboretum of native (although not necessarily indigenous) species, constructed nature trails and a look-out tower. It was recommended as a recreation reserve in 1977.

Notes:

1. The picnic area to the east is not included within the proposed reserve. See Chapter J: Community Use Areas.
2. The Shire of Mornington has engaged consultants to prepare vegetation and faunal assessments of the area, which will form the basis of a management plan.

C28 Bald Hill (22.2 ha)

Examples of heathy woodland, coastal grassy forest, and sand heathland. The original (3.6 ha) area was recommended as a bushland reserve (I85) in 1977; additional land was subsequently donated to the Crown.

FAUNA

The Wildlife Branch of the then Department of Conservation and Environment undertook extensive field surveys of the fauna of the Melbourne Area, District 2, collated existing information and prepared a report on the vertebrate fauna of the area which was then incorporated in the Descriptive Report. The Branch has also identified areas that are of particular importance for the conservation of that fauna.

The study area supports a very diverse vertebrate fauna and a large proportion of the State's threatened species. It contains the entire range of Victoria's two faunal emblems - Leadbeater's possum and helmeted honeyeater. The proximity of Melbourne has contributed to the alienation and clearing of a variety of faunal habitats which has affected both the status and distribution of the fauna.

All areas of native vegetation provide habitat for some species of wildlife, and hence have some faunal value. Where there is a high species diversity, or a number of significant species recorded, the faunal value of the area is increased. The study area contains many areas of high value for faunal conservation.

Leadbeater's possum

Leadbeater's possum (*Gymnobelideus leadbeateri*) is endemic to the State and is one of Victoria's two faunal emblems. It is classified as 'vulnerable' by the International Union for the Conservation of Nature (1988), designated as 'endangered' by the Committee of Nature Conservation Ministers (1989) and by the Department of Conservation and Environment in 1991, and it is listed under the *Flora and Fauna Guarantee Act 1988*.

Over the last decade, extensive surveys have been undertaken to determine the distribution of the species as well as a considerable amount of intensive research on its habitat requirements. The existence of suitable habitat and past records suggest that Leadbeater's possum had a wider distribution than currently reported but its current entire range now occurs within Melbourne Area, District 2 and is largely restricted to the montane ash forests of the Central Highlands. These forests comprise vegetation communities dominated by mountain ash, alpine ash or shining gum.

The possums are not uniformly distributed throughout this area and recent research has also indicated that both distribution and abundance are largely determined by the availability of food and nest sites. However, information on this type of habitat resource is also limited.

Of considerable interest is a small resident colony of Leadbeater's possum in a lowland forest dominated by mountain swamp gum along Cockatoo Creek (within the area covered under Recommendation C45 below). The habitat here contrasts markedly with that of the montane forests of the Central Highlands. It may, however, be similar to the habitat that was on the edge of Koo-Wee-Rup swamp at Tynong, long since drained and cleared, from where a specimen was collected prior to 1910.

Habitat preferences

The three principal habitat requirements of Leadbeater's possum are:

(a) Suitable nest trees

Tree hollows are essential for shelter and breeding and maximum population densities may be obtained where the potential nest-tree density exceeds 12 per 3 ha. A modified form of regression analysis predicts that Leadbeater's possum will be absent from the majority of sites with fewer than 4.2 potential nest-trees per 3 ha. Individuals of a colony move around and use a number of nest trees.

Although, on average, ash trees begin to form hollows when approximately 120 years old, these may not be suitable as nest trees for Leadbeater's possum until they are about 200 years old. Some nest trees are at least 400 years old. Preferred are decayed, short, large-diameter trees which contain numerous hollows and have

dense surrounding understorey vegetation. For management purposes, the Department of Conservation and Natural Resources (DCNR) has defined a Leadbeater's nest tree as a living hollow-bearing tree which is more than 6 m tall and at least 1.1 m in butt diameter or a dead hollow-bearing tree which is more than 6 m tall with a butt diameter of at least 0.7 m.

(b) Structurally dense vegetation

Leadbeater's possum harvests a dispersed food supply. The species lacks a gliding membrane and must therefore run and jump between trees and, as a result, requires a relatively continuous layer through which to move. Structurally dense regrowth or a dense understorey of wattles and other shrubs in older-growth forests are therefore important habitat components.

(c) Availability of food

The major components of the food resource of Leadbeater's possum are obtained from smooth-barked eucalypts and some species of wattle. About 20% of their diet comprises arthropods, particularly tree crickets (which appear to be the most nutritionally important and which shelter in loose bark hanging from living trees), and beetles, moths and spiders. The balance is made up of plant exudates (wattle gum, nectar and eucalypt manna) and insect exudates (psyllid honeydew).

The availability of all known food resources varies seasonally and therefore both wattles and eucalypts are necessary habitat components.

Hence, the habitat requirements of Leadbeater's possum are best met by an ample supply of old trees with hollows and an adequate supply of food which is provided by wattles and eucalypts.

Threats

The 1939 fires burnt 79% of the Central Highlands. The resulting dense regeneration and wattle currently provide foraging substrate and permit mobility for the possum, while the older trees killed or damaged by the fire provide nesting sites. Research shows that the value of these forests as habitat is reducing and

the major threat to the long-term survival of Leadbeater's possum in some areas is the collapse of the nest trees killed in the 1939 fires.

Fire and logging may also reduce the availability of nest trees. The rate of senescence and decline in numbers of nest trees increase under conventional clear-felling operations through their exposure to wind, the effects of regeneration burning and their removal for safety reasons. Fewer nest trees remain after clear-felling compared to the numbers that remain after wildfire. Also, clear-felling of the same forest coupe with a periodicity of less than 150 years significantly reduces or eliminates the potential for hollows becoming available on that area in the future.

Outlook in regrowth forests

Most of the current nest trees were killed or damaged by the 1939 fires and have provided valuable nesting habitat since then, especially where they are associated with regrowth ash forest and/or a dense wattle understorey.

Leadbeater's possums have been found in at least 25 Forest Management Blocks in State forest in the Central Highlands. Only about 6% of the total area of the 12 Forest Management Blocks so far assessed for suitable Leadbeater's possum habitat - using aerial photograph interpretation - supports older-aged living and dead ash trees amongst 1939 ash regeneration. The preferred short, large diameter trees are usually below the canopy level of the regrowth and cannot be identified on aerial photographs, as a result, additional nest trees are often located during on-ground inspections.

However, information in 1985 indicated that the preferred nest trees were collapsing at an average annual rate of more than 3.6%, such that, in the next 50 to 100 years, their availability for Leadbeater's possum will be significantly diminished. Apart from scattered mature trees amongst the regrowth, hollows suitable for the possum will be confined essentially to the older-aged and uneven-aged forests.

Furthermore, even if timber harvesting were excluded, the regrowth ash forests will not be capable of providing the recruitment of suitable nest trees for a further 150 years - assuming that ash trees must be about 200 years old before they can provide nest trees for the possum.

Outlook in older-aged forests

The remaining older-aged (essentially those forests recorded in resource documents as mature/overmature) and uneven-aged ash forests within the range of Leadbeater's possum throughout the Central Highlands are therefore of critical importance for the long-term survival of the possum and are also important for other native fauna that nest in tree hollows. While population densities of the possum are relatively lower in these forests than in regrowth ones, they are the only areas capable of providing nest trees during the hiatus over the next 150 years before the 1939 regrowth trees are suitable. With time, older trees in these forests will die and eventually collapse; nest trees will then be provided by recruitment from the younger trees.

These ash forests cover a gross area of some 14 000 ha of State forest and a further 9900 ha in the Maroondah, O'Shannassy and Upper Yarra water supply catchments. These catchments are presently unavailable for timber harvesting and experience a lower frequency of fire than would occur naturally.

Mature ash trees are capable of surviving fires of moderate intensity. If these forests are burnt, regeneration of ash and understorey species will be promoted in gaps. This is most likely the mechanism by which much of the ash forests regenerated prior to the 1939 fires. These fires, however, were so intense throughout much of the Central Highlands that few areas of the original forest escaped. In addition, the concerted effort to salvage the burnt logs covered extensive areas and included many trees that had survived the fire.

Within State forest, older-aged forests are now generally located on sheltered south-east facing slopes, in and adjacent to moist gullies, or on relatively flat plateaux. Such sites tended not to be severely burnt in the 1939 fires.

Fires do not necessarily kill every tree. Usually, native forests are a mosaic of stands and individual trees of various ages. Those trees that are killed may produce nest trees in the short term and the survivors, even if damaged (or because of it), will provide habitat into the future.

It follows that, apart from the older-aged and uneven-aged forests, and unless specific silvicultural practices are instituted to accelerate the production of nest trees in regrowth forests, there will be a gap of some

150 years in the recruitment of nest trees (even with the exclusion of timber harvesting) over much of the Central Highlands. DCNR is considering silvicultural systems aimed at reducing the loss of existing habitat, providing new habitat, or to accelerate its production.

There is little information on the required numbers of individuals of Leadbeater's possum to ensure its long-term survivability; there is also insufficient data on its ability to survive in patches and strips of suitable habitat. This indicates the importance of ensuring the maintenance of the habitat across the possum's range to enable repopulation of harvested areas.

Any strategy to protect Leadbeater's possum must therefore have two elements:

1. Protection of older-aged and uneven-aged forest.
2. Mechanisms that provide for the development of new nest trees for Leadbeater's possum, recognising that, unless silvicultural practices can accelerate the process, the regrowth forests may only be of value in at least 150 years' time. If a start is not made, the time before new habitat becomes available will be extended.

Principles and provisions for the conservation of the habitat of Leadbeater's possum

The Council considers that the following principles, which apply principally to the conservation of the habitat of Leadbeater's possum, have equal relevance to the habitat of other hollow-dependent species. Most of these principles are being addressed during review by the Department of Conservation and Natural Resources of the Draft Management Strategies for the conservation of the possum.

1. *Suitable habitat should be maintained across the range of Leadbeater's possum in the Central Highlands to provide for the long-term survival of the species.*
2. *All older-aged ash forests (essentially comprising trees established prior to 1900), uneven-aged ash forests in which the older-aged trees predominate, and individual, living older-aged ash eucalypt trees should be conserved. This can be achieved through a combination of parks and reserves and management prescriptions.*

The proposed Central Highlands National Park contains the bulk of the mature and older-aged ash forest of the Central Highlands and lies at the centre of the distribution of Leadbeater's possum. Together with the other existing and proposed reserves and parks within the range of the possum, some 16 300 ha of older-aged ash forest (about 54% of the total in the study area) would be included in reserves. Further areas of the older trees are located on steep slopes, adjacent to streams or are unsuitable for harvesting and are excluded from harvesting under prescriptions laid down in the Code of Forest practices. In addition, local Regional management prescriptions within DCNR require that all areas of mature ash forest in State forest be protected from all types of timber harvesting. This prescription is supported by the Council.

Detailed information about the older-aged ash forests of the study area is not readily available. DCNR recently started a study of the old growth forests of the Central Highlands to contribute to an investigation of the area by the Australian Heritage Commission (AHC). When finished, that study will provide information about the location, extent and condition of the older-aged forests within the range of Leadbeater's possum. The Council has deferred making a recommendation about the status of the older-aged forests outside parks and reserves pending the outcome of the study for the AHC.

3. *A proportion of the regrowth ash forest in the Central Highlands should similarly be set aside in parks, reserves and through prescriptions. This would provide for the development of new habitat suitable for Leadbeater's possum and other hollow-dependent species in the long term.*

The Central Highlands National Park proposed by the Council and the other existing and proposed parks and reserves, contain some 36 300 ha (26%) of the ash regrowth of the Central Highlands and are contiguous with older-aged and uneven-age forests. In addition, areas excluded from timber harvesting by prescriptions, such as those on steep slopes, in streamside reserves and adjacent to rainforest contribute a further 13% of regrowth.

4. *Regrowth ash forests in State forest which contain greater than 12 hollow-bearing trees per 3 hectares and include a wattle understorey should be protected; at least until they no longer provide suitable*

until they no longer provide suitable habitat for Leadbeater's possum - that is, until most or all of the nest trees have collapsed.

Such areas would assist in maintaining the maximum possible Leadbeater's possum population in the short term in contrast with the older-aged forests which are capable of providing the on-going recruitment of nest trees for hollow-dependent fauna.

This principle is recognised in the management prescriptions for the conservation of Leadbeater's possum.

5. *Salvage logging following fire or other damaging agency should only occur if it takes place according to established procedures that protect the habitat of Leadbeater's possum.*
6. *Management prescriptions, which might include specific silvicultural practices, should be developed for timber production forests in order to conserve existing habitat as a complement to the reserve system and to enhance and increase suitable habitat for hollow-dependent fauna, particularly Leadbeater's possum.*

Guidelines developed by DCNR to assist Regional staff in implementation of the Leadbeater's prescriptions also provide for the interconnection of areas of ecologically important forest with suitable corridors to maintain a continuous reserve system; this is supported by the Council.

7. *Subject to other requirements for nature conservation, such as to provide for the protection of other specific plants and animals, the remaining regrowth ash forests should be available for timber production.*

Costs of the various levels of protection also require assessment. Provision of artificial nest boxes in areas of important habitat, for instance, would be a very expensive option and is not considered viable for large areas. However, a program of habitat development must start now, otherwise the benefits will be delayed.

'Draft Management Strategies for the Conservation of Leadbeater's Possum' were developed by DCNR to address the two key elements identified earlier; namely, the protection of existing older-aged forests which provide suitable habitat now and in the future,

and mechanisms for developing new habitat for the long-term. In formulating the strategies, the department must also provide for a level of timber production which will meet legislated commitments. The strategies therefore provide a compromise between two uses of the same resource.

Further discussion about the management prescriptions in train and the timber resources affected by the strategies to protect Leadbeater's possum is provided in Chapter E - State Forest.

Helmeted honeyeater

Victoria's other faunal emblem, the helmeted honeyeater (*Lichenostomus melanops cassidix*), is one of the State's rarest birds. It is an endangered species, and the entire wild population currently totals about 70 individuals.

Helmeted Honeyeater is considered to be a subspecies of the widespread yellow-tufted honeyeater but is differentiated from the latter by a distinctive crest or 'helmet' on its forehead.

Around the turn of the Century the bird was found in riparian habitats throughout the Western Port and middle Yarra River catchments, where it appears to have been relatively uncommon. By 1965 it was found only in remnant vegetation along the Woori Yallock, Cockatoo, Sheep Station, and Cardinia Creeks. The Yellingbo State Nature Reserve was proclaimed in 1965 to incorporate the bird's habitat along the first three of these creeks - which then, as now, were the major strongholds of the species.

Council, in its 1977 recommendations, recommended the creation of a 160-ha Wildlife Reserve at Yellingbo - reflecting the reserve referred to above.

Since 1977, acquisition of land occupied by the species has brought the area of the reserve to some 560 ha. Negotiations are under way for further acquisitions. An associated program of regeneration of suitable habitat has seen more than 80 000 trees and shrubs planted here.

Until recent years the population has continued to decline. Of the colonies known in 1977, that recorded at Butterfield Reserve (at the confluence of Sassafras and Menzies Creeks) has not been sighted since 1979. The colony

along Cardinia Creek (near its confluence with Stony Creek) declined from an estimated 100 individuals in 1948 to some six to eight in 1982 and, like the colony at Cockatoo, has not been recorded since the wildfires of Ash Wednesday in February 1983.

The only remaining colony is at Yellingbo (located along the Woori Yallock, Cockatoo, and Macclesfield Creeks). Notwithstanding the extensions to the reserve and the replanting programs, its numbers have continued to decline: in 1963 at least 180 individuals were estimated to be here; in 1978 and 1979, between 100 and 150 birds were found; by 1990/91 the total had diminished to approximately 60 individuals with 15 breeding pairs. At present, about 21 breeding pairs (possibly 26) are known here, of a total of some 70 individuals.

It is now known, with the benefit of hindsight, that reservation of land and enhancement of existing core habitat, alone, will not ensure the survival of the helmeted honeyeater.

The Department of Conservation and Natural Resources, in consultation with other scientific experts, has prepared a broad multifaceted recovery plan for the species. The long-term aim of the plan, adopted as a formal Action Statement under the *Flora and Fauna Guarantee Act* 1988, is 'to ensure the survival of the helmeted honeyeater by achieving a stable population of at least 1000 individuals in at least 10 separate but interconnected colonies dispersed along several creek systems in the mid-Yarra River and Western Port catchments'. It is envisaged that this will ensure that the population of the helmeted honeyeater is self-sustaining and capable of withstanding foreseeable demographic, environmental, and genetic variables, and natural catastrophes.

The short-term (by 1993) aim of the plan is to double, to 100 adults, the number of helmeted honeyeaters in the wild. To this end, the plan sets out the following tasks:

- * form a Recovery Team
- * survey yellow-tufted honeyeaters in west Gippsland
- * clarify phylogenetic relationships between the three races of the species
- * examine genetic diversity

- * monitor the wild population
- * study interactions with bell miners
- * undertake population viability analysis
- * define vegetation communities and processes
- * research causes of eucalypt dieback
- * prepare a revegetation strategy
- * prepare a management plan for the Yellingbo reserve
- * document land tenure and threats at critical sites
- * establish a captive colony
- * prepare a strategy for the release of captive-bred birds.

It is likely that management will require habitat manipulation, culling of competing species (the bell miner), and possibly pre-release aviaries and artificial feeding.

Sites containing extant wild populations, those without extant populations but known to have been used since 1950, and those without extant populations but with potential for the establishment of colonies of helmeted honeyeater are all considered important for achieving the long-term aim of the recovery plan. Based on present knowledge, such sites would comprise lowland swamp forest (for nesting sites) within the species' known range, preferably adjacent to heathy open-forest communities.

It is accepted that not all of these sites will be on Crown land, and remnant vegetation on adjoining freehold land may be critical to the realisation of a site's potential.

Rehabilitation of the land in and around the only extant population at Yellingbo remains critical.

In view of the endangered status of the helmeted honeyeater, the isolation of the bird's habitat amongst freehold, and on the basis of existing information, Council recommends that the Yellingbo Reserve be extended and set aside as a fauna and flora reserve (see Recommendation C45 below), and that a new fauna and flora reserve be created along Sassafras Creek (Recommendation C46).

Helmeted Honeyeater

Recommendation

C29 That, if a colony of helmeted honeyeater is located within a park or reserve, or an area is nominated by the helmeted honeyeater Recovery Team as a suitable release site, the protection and preservation of the species and its habitat be a primary objective of management of the park or reserve.

Spotted tree frog

The spotted tree frog (*Litoria spenceri*) is considered to be an endangered species in Victoria. The Department of Conservation and Natural Resources is currently preparing an Action Statement for the management of this species under the Flora and Fauna Guarantee.

From 1988 to the time of preparation of the Descriptive Report, extensive searches at all sites in which the species had previously been recorded in Victoria yielded only two extant populations - at Taponga River in this study area and in the Wongungarra River in the Alpine Area. Outside Victoria, the only record was from Bogong Creek near Mount Kosciusko. This led to the conclusion that spotted tree frog appeared to have recently become extinct at the sites on 10 of the 12 river systems where it had been previously recorded and that, accordingly, immediate steps should be taken to conserve the two extant populations in Victoria.

The causes of this apparent decline were not obvious, although disturbance by eductor dredging, timber harvesting, recreational activities and introduced predators were suggested.

The Arthur Rylah Institute's 1991 Technical Report Series No 116: "Conservation Status, Ecology and Management of the Spotted Tree Frog (*Litoria spenceri*)", by Watson *et al*, suggested various measures to minimise disturbance to the streams. For the Taponga River, these included relocation of picnic and camping facilities, closure of the stream system to fishing, and prevention of further disturbance such as roading, timber harvesting and fuel-reduction burning in the catchment (at least until knowledge about the distribution of the frog was increased and adequate studies undertaken of its life-history and demography). The report also suggested that the catchment of the Wongungarra River be accorded a land-use status that would preclude further disturbance.

In early 1992, further sampling of 16 streams targeted historical locations of the frog which had not been intensively surveyed in 1991, and other streams selected on the basis of habitat potential and accessibility. Spotted tree frogs were located at 14 of 29 sample sites on 9 of the 16 streams investigated; three streams - the Black and Goulburn Rivers in this study area and Snowy Creek in the Alpine Area - are new localities for the species.

Eight of the 14 recent records of spotted tree frog occur on five streams in the Council's Melbourne Area District 2 (nine streams were sampled here). The highest number and greatest density of individuals in the State were recorded in that section of the Goulburn and Black Rivers extending 2 km above and below their confluence. The abundance and distribution of the population of the frog on the Taponga River and its tributary - Still Creek - has remained much the same over the period of the surveys (the second greatest density). The other stream in the study area in which this species has recently been identified is the Big River.

Obvious disturbance, including existing tracks and new construction work, blackberries, camping, fishing and cattle grazing, was observed along a number of streams where the spotted tree frog was found. Despite the enforcement of legislation prohibiting eductor dredging in Victoria, some has occurred in a number of streams in the vicinity of frog populations, including the Goulburn River in the study area.

To date, the spotted tree frog is known to occur on nine streams in the State and probably consists of seven different populations. Its discovery in previously unsurveyed streams highlights the need for further surveys in other areas of potentially suitable habitat (a further 15 streams in the State have been identified as warranting further investigation) - including in the Central Highlands. Investigation to

establish the size of the known populations and the distribution of spotted tree frog in those watercourses in which it is known is also required.

The biology and ecology of the species are at present uncertain and, until more definite data are available, there is concern that any activities that have the potential to adversely affect its survival should be avoided. For instance, the Council has received suggestions that the whole 7850-ha Taponga River catchment should be reserved for the protection of the habitat of the known population of spotted tree frog. The ease of access to the site and detailed knowledge of the history of this particular population makes it a valuable scientific resource. Nevertheless, and particularly in the light of the recent discoveries of new populations and the rediscovery of the species in streams where it was thought to be extinct, the Council considers it inappropriate at this stage to recommend the reservation of specific areas as

nature conservation reserves on the basis of the presence of the frog, but that the area should be managed under the Action Statement.

Pending further research to identify the full distribution and habitat requirements the species, and the finalisation of the Action Statement, it is recommended that management of those stream catchments in which the spotted tree frog is located takes account of the need to protect its habitat and that, when identified, sites of particular importance, such as critical breeding areas, be firmly protected (see Chapter E - State Forest). In addition, further research is required in order to develop effective management strategies for the long-term conservation of the species.

FAUNA AND FLORA RESERVES

Fauna and flora reserves support valuable habitat for populations of indigenous fauna and contain examples of indigenous vegetation with considerable floristic importance.

FAUNA AND FLORA RESERVES

Recommendations

C30 - C51 That the following sites, indicated on Map A, which support indigenous animals and their habitat, be conserved and protected in accordance with the general recommendation for nature conservation reserves outlined above.

Existing fauna and flora reserves

C30 Horseshoe Lagoon (40 ha)

Notes:

1. A camping site in the south-east corner of this reserve should be excised from the reserve.
2. A land exchange, which would consolidate wetlands on the north side of the reserve, should be investigated.

C31 Sweetwater Creek (1240 ha)

Heathy woodland of yertchuk (*Eucalyptus consideniana*), small grass tree (*Xanthorrhoea minor*), and wiry spear grass (*Stipa muelleri*). Coral fern (*Gleichenia* spp.) dominates the ground layer in the wetter and more sheltered aspects.

Vertebrate fauna include the white-footed dunnart, grey kangaroo, chestnut-rumped

hylacola, Spencer's skink, and the rare mourning skink. The area is also significant for butterflies.

This reserve was recommended by the Council in 1983 following the Hill End Special Investigation.

C32 Bull Beef Creek (1320 ha)

Yertchuk woodland with a dense heath understorey dominated by prickly tea-tree (*Leptospermum juniperinum*), scrambling coral fern (*Gleichenia microphylla*), hairpin banksia (*Banksia spinulosa*), and spreading rope-rush (*Calorophus lateriflorus*).

The area supports the rare species - broad-toothed rat and mourning skink as well as the bush rat, swamp rat, brown antechinus, dusky antechinus, long-nosed bandicoot, swamp wallaby, and wombat.

This reserve originally covered about 1490 ha and was recommended by the Council in 1983 following the Hill End Special Investigation. The proposed 170-ha Pretty Creek Reference Area (B26) occupies the north-eastern corner.

C33 The Gurdies (200 ha)

Supporting valuable examples of heathy foothill forest, sand heathland, and swamp scrub, this remnant of once more widespread vegetation communities supports the swamp antechinus and the swift parrot.

This area was recommended as a flora and fauna reserve (H25) in 1977.

C34 Grantville (120 ha)

An important remnant of sand heathland, coastal grassy forest, and swamp scrub providing faunal habitat that was much more widespread in the region.

This area was recommended as a flora and fauna reserve (H24) in 1977. The government varied that recommendation to permit the Commonwealth of Australia continued use of a rifle range here.

Recommendation

C34(vii) That, as part of a proposed rationalisation of rifle ranges in the region, alternative arrangements be made for the rifle club using this area and the range be closed and rehabilitated.

Note:

Appropriate warnings should be erected to restrict public access through those parts of the reserve affected by the rifle range when it is in use.

C35 Phillip Island Koala Centre (1 ha)

This area incorporates the Phillip Island Koala Conservation Centre (10 ha of land recently purchased by the government) and the Five Ways Koala Reserve. It abuts the 6.6-ha David Forrest Koala Reserve, which is owned by the Shire and is an important adjunct to koala management in the area, and the Oswin Roberts Koala Reserve which now forms part of the proposed Phillip Island State (Coastal) Park - see recommendation A22.

Koalas were introduced to Phillip Island late last century and the population increased rapidly; their numbers have plummeted in recent years. The Conservation Centre is a means of increasing the population so that koalas may be re-introduced over a wider area on the island as habitat is improved.

The Koala Conservation Centre is planned to include an information centre, toilet block, car parks, artificial wetlands, a koala enclosure encompassing an area of remnant native vegetation, a smaller observation enclosure, and a large area which is to be managed as a tree farm to produce eucalypt leaves to feed the enclosed koalas.

Recommendation

C35 That

(vii) manipulation of natural systems be permitted to ensure the protection and enhancement of koala habitat and food sources

and

(viii) provisions for the interpretation and viewing of koalas be permitted.

Note:

This area is managed by the Phillip Island Penguin Reserve Committee of Management; this arrangement should continue.

Proposed new fauna and flora reserves

C36 Homewood (30 ha)

and

C37 Molesworth (31.8 ha)

Important and representative remnants of floodplain riparian woodland and associated wetland communities of the Goulburn River floodplain, sections of which have a rich and diverse flora. They are also within an area assessed as being of State significance for waterbirds and breeding ducks.

These areas were recommended as wildlife reserves (C10 and C11 respectively) in 1977.

C38 Taggerty River—Whitehouse Creek (620 ha)

This area expands the existing Keppel Falls reserve and contains major riparian stands of mature cool temperate rainforest. Two rare plants are found here: snowdrop wood-sorrel (*Oxalis magellanica*) and Baw Baw berry (*Wittsteinia vacciniacea*). In addition, the area contains montane wet forest of alpine ash and wet sclerophyll forest comprising largely older-aged mountain ash trees - which provide long-term habitat for hollow-dependent fauna such as Leadbeater's possum. Rainforest areas provides breeding habitat for the pink robin.

The reserve is traversed by the popular tourist route - Lady Talbot Drive and includes Keppel Falls, Phantom Falls and walking tracks through the rainforest.

C39 Gresswell Forest (46.1 ha)

Representative examples of plains grassy woodland, a community that is rare in the study area.

A very diverse bat and bird fauna is found here, with records of regent honeyeater and eastern broad-nosed bat. It is the most diverse area for bats close to Melbourne.

Notes:

1. This area is managed for conservation by staff of the LaTrobe University wildlife reserve.
2. Viability of the Gresswell Reserve would be increased by linking it by the proposed Strathallan habitat corridor through the Mont Park area.
3. The adjoining Gresswell Hill and the red gum woodlands around the Gresswell Rehabilitation Centre should be managed to protect their nature conservation values.
4. If the Gresswell Rehabilitation Centre is no longer required, Gresswell Hill and the red gum woodlands lying north, east and south of the buildings should be considered for addition to the fauna and flora reserve.
5. The government recently announced the development of a new suburb in areas adjoining the proposed reserve.

C40 Pauline Toner Butterfly Reserve (5 ha)
Representative examples of dry sclerophyll

forest, including several regionally significant plant species, set aside to protect a population of the Eltham copper butterfly.

C41 One Tree Hill (143.1 ha)

Incorporating the upper catchment of Happy Valley Creek, this area supports representative examples of dry sclerophyll forest of red box and red stringybark, valley forest of yellow box and a small area of riparian forest. The reserve displays strong diversity through both aspect and elevation and is considered to be of State botanical significance.

It supports a diverse faunal population and 116 species have been recorded (78 bird species, 24 mammals, 7 reptiles and 7 frogs). Old mine shafts beneath the reserve contain a small roosting colony of eastern horseshoe-bats, and up to 1000 common bent-wing bats, the second largest roost of the latter species in central Victoria. Both bats are designated as rare in Victoria as are brush-tailed phascogale and common dunnart, species also found at One Tree Hill.

One Tree Hill forms an integral part of the proposed Warrandyte - Kinglake habitat link (recommendation C52 below). The area was recommended as bushland reserve (I53) in 1977.

Recommendation

C41(vii) That

- (a) mineral exploration continue to be permitted in this reserve
- (b) if a commercial mineral resource is found, the government decide whether mining will be permitted.

Note:

In assessing specific mining proposals, the potential impact on conservation values and whether access can be obtained from outside the reserve should be assessed.

C42 Smiths Gully and Peter Franke Reserve (2.4 ha)

This area has a high diversity of mammals and birds, including regent honeyeater,

brush-tailed phascogale, large-footed myotis, long-nosed bandicoot, and powerful owl.

C43 Coranderrk (144 ha)

High diversity of representative vegetation types, including *Eucalyptus obliqua* damp sclerophyll forest, *E. radiata* foothill forest, *E. ovata* - *E. camphora* swampy riparian forest, *E. viminalis* riparian forest, and floodplain wetland complex with *Phragmites australis*.

A total of some 350 plant species here indicates the diversity of the vegetation; three of which are of State, and 76 of regional significance.

It supports a high mammal diversity comprising 33 native species, including 12 species of bat - the highest diversity within the study area and the highest density known within Victoria of the large-footed myotis. Other significant species found here include the grey goshawk, powerful owl, eastern broad-nosed bat and tree goanna. Some 60 eastern grey kangaroos, and about 60 swamp wallabies are also present in the reserve, which is surrounded by a high fence.

The 'Nature Trail', within the Healesville Sanctuary, abuts the Coranderrk reserve. This 4-ha area is included within the proposed nature conservation reserve and provides additional representation of *E. radiata* foothill forest and *E. viminalis* riparian forest, and supports populations of 5 regionally significant plant species.

Recommendation

C43(vii) That passive recreation and other access to this reserve not be permitted except by arrangement with the managers

and that it continue to be managed by the Zoological Board of Victoria.

Notes:

1. The area is often used for flora and fauna research, which should continue to be permitted by arrangement with the management of the Sanctuary.

2. Healesville Sanctuary itself, the administration buildings, sheds, Lake Coranderrk, and the plantation that is used to provide food for the koalas are not included in the proposed nature conservation reserve but are classified as a Community Use Area (see Recommendation J23).

C44 Warramate Hills (Yarraloch) (486 ha)

This area, recently acquired by the government, is located near the junction of Woori Yallock Creek with the Yarra River and contains one of the few areas of relatively undisturbed native vegetation in the Yarra Valley.

It supports high quality and unusually weed-free examples of damp sclerophyll forest, wet sclerophyll forest, and sclerophyll woodland comprising more than 190 plant species. Zoological studies of the area indicate a wide range of native species including 20 mammals, 74 species of birds, three of reptiles (including the threatened tree goanna), and an endangered species of invertebrate (a damselfly).

C45 Yellingbo (277 ha)

The original area, which was recommended as a wildlife reserve (C13) in 1977, extended along Cockatoo, Sheep Station and Woori Yallock Creeks in the vicinity of Yellingbo. It is now proposed that the reserve be extended for about 3 km upstream along Woori Yallock Creek.

The reserve supports damp sclerophyll forest, wet heathland, swamp heathland, and swampy riparian forest. The latter is dominated by mountain swamp gum (*Eucalyptus camphora*) at an unusually low elevation and close to its western limit in the State.

As noted above, this area supports the only remaining population of the helmeted honeyeater. It also supports an outlying and atypical population of Leadbeater's possum and possibly the largest population of swamp skink in Victoria. Powerful owl, barking owl, glossy grass skink have also been recorded here and large numbers of swift parrots feed on the manna gum when it flowers.

C46 Sassafras Creek (515 ha)

This area incorporates Sassafras Creek, Tea Tree Creek, Menzies Creek and the lower reaches of Emerald Creek

Helmeted honeyeater has been found here in the past and it has been identified as potential site for re-introduction of the species. The area includes examples of damp sclerophyll forest and shrubby foothill forest; mountain ash dominates the overstorey in the upper reaches, while mountain grey gum and manna gum dominate the lower reaches. These communities provide habitat for a wide diversity of faunal species. The rare slender tree-fern is found here in a number of locations.

A walking track (initiated in the 1920s) traverses the area and several picnic sites are accessible by vehicle. This track should be maintained.

Note:

This proposed reserve includes the areas of public land that support forest and fern gullies adjoining the water frontage reserve, but excludes the Baynes Park Reserve at Monbulk.

C47 Langwarrin (214 ha)

This reserve was owned by the Commonwealth at the time of Council's 1977 recommendations. It was acquired by the State government and reserved as a flora and fauna reserve.

The reserve was used for military encampments in the late 1880s and development undertaken, mainly in the west, during World War I. The majority were removed in 1921 and the area subsequently little used other than for occasional bivouacs and army reserve training.

The previously disturbed sites (about 20% of the area) have largely regenerated and the reserve includes examples of coastal grassy forest and sand heathland. It is considered to be of State botanical significance.

The area's importance for fauna is enhanced by the remnant areas of sand heathland. Both the vulnerable swift parrot and the endangered New Holland

mouse have been recorded here.

The site also retains a number of artefacts from the period of military occupation, including evidence of the military camp, a water reservoir, and rifle-range butts and target pits which give the area State historical significance.

Recommendation

C47(vii) That artefacts of historic significance be protected, subject to the removal of environmental hazards.

Note:

The mature non-indigenous trees associated with the old military camp are an integral part of the area's historical context but are a seed source of environmental weeds that compromise the nature conservation values.

C48 North Westernport (1810 ha)

In 1977 the Council recommended the establishment of a wildlife reserve that extended along the Western Port coastline from Bungower Road - near Tyabb, to Yallock Creek - near Koo-Wee-Rup and included the islands of the inner bay between French Island and the mainland. This reserve was to protect the feeding and roosting areas of waterfowl and migratory waders.

In recognition of the important nature conservation values of the coastal land, it is now proposed that the public land coastal frontage of the former wildlife reserve - extended east to the mouth of Lang Lang River, and extending 150 metres off-shore from high water mark, together with Moodys Inlet and Quail and Chinaman Islands, be included in a fauna and flora reserve.

The coastal strip supports sand heathland, coastal saltmarsh (with extensive mangroves), and swamp scrub, while the off-shore strip includes mangroves. Quail and Chinaman Islands, which also support good examples of sand heathland and coastal saltmarsh as well as coastal heathland, include a low woodland vegetation dominated by coast manna gum (a community that is apparently unique to Quail Island and the opposite coast near

Warneet). These islands are considered to be of State botanical significance.

A range of mammal and bird species is found on Quail and Chinaman Islands. Of note is a population of the rare swamp skink in the coastal saltmarsh. The off-shore areas are primary wader foraging and resting areas and are considered to be of national zoological significance.

The eastern extension to the Lang Lang river comprises a somewhat discontinuous Crown frontage but includes geomorphologically significant earth cliffs, a site where the rare and endangered orange-bellied parrot has been recorded, and an important high-tide roost for waders. There is little public access to this section of the proposed reserve.

Moodys Inlet encompasses remnant melaleuca scrub and the mangrove-fringed anabranches of Deep Creek.

Levee banks constructed to reduce tidal inundation of adjacent low-lying farmland have, in many instances, effectively incorporated public land with adjoining freehold.

Recommendation

C48 That

- (vii) the manager delineate the reserve boundaries and liaise with adjacent land holders with respect to the management of existing levee banks
- (viii) no more levee banks be permitted on public land
- (ix) no further expansion of jetties be permitted.

Notes:

1. Council's intention is to include most of the mangroves in the reserve and, as their extent has not been surveyed, the seaward boundary of the proposed reserve extends a notional 150 metres from high water mark. The future status of the inter-tidal areas will be investigated in the context of the nature conservation values of the whole of Western Port during Council's

Marine and Coastal Special Investigation. Management provisions to ensure the protection and/or sustainable use of the marine resources of the area will also be addressed at that time. This proposed recommendation highlights the important values of the area, but Council will take account of the broader study during consideration of the final recommendations.

2. Barralliar, Pelican and Ram Islands, included in the previous wildlife reserve, are now proposed to be included in the French Island National Park (see Recommendation A6).

3. Developed sections of the coast at Cannons Creek, Warneet, Blind Bight, and Tooradin were excluded from the previously-recommended wildlife reserve by the Government and now form part of the coastal reserve - see Chapter H.

4. Portion of the site of the State Electricity Commission's proposed North Tyabb terminal station is included in this proposed reserve.

C49 Lang Lang (400 ha)

This proposed reserve comprises one of the few large areas of vegetated public land amongst largely cleared freehold around Lang Lang, enhancing its landscape values.

Vegetation consists predominantly of sand heathland of *Leptospermum myrsinoides* (some stands of which are very old), but includes swamp sedgeland as well as riparian forest fringing Adams Creek, a tributary of the Lang Lang River. Several swamps also occur, perched above the watertable. Recent research work has indicated the presence of a number of species of rare fungi - one of which is thought to represent a new genus record for Australia.

It supports remnant habitat for a wide range of mammals, birds, reptiles (including the lace monitor), and nine species of amphibian.

A railway line bisects the proposed reserve which includes a number of cleared fire breaks; nevertheless it is little

disturbed and few weed species are found here.

The short, curving dune crests and internal drainage depressions are representative of the Cranbourne Sand topography.

Notes:

1. The proposed reserve includes the Crown frontage of Adams Creek but excludes the railway reserve which bisects it.
2. Council is aware that the area contains considerable sand resources. Portion of the proposed reserve was included in an earth resources reserve in Council's 1977 recommendations but was not subject to an extractive industry tenement.

**C50 Reef Island and Bass River outlet
(180 ha)**

The vegetation of the coast and Reef Island comprises mainly coastal saltmarsh which forms part of the larger Western Port site of significance for foraging and resting of waders.

The complex of the lower floodplain, delta, and intertidal sandy zone of the Bass River is classified as of national geomorphological significance and provides opportunity for research into deltaic and intertidal dynamics.

C51 Wonthaggi heathlands (168 ha)

This area supports valuable and relatively natural examples of sand heathland and coastal heathland, as well as coastal dune scrub and coastal banksia woodland communities. It is considered to be of State botanical significance and is of high conservation value for fauna, supporting the rare swamp antechinus. Swamp rat and at least 35 species of birds are also found here.

The area is used for passive activities such as walking, nature study, photography, and education, and some horse riding and limited driving.

Recommendation

C51(vii) That, as part of a proposed rationalisation of rifle ranges in the region, alternative

arrangements be made in the longer term for the rifle club using this area and the range be closed and rehabilitated.

Notes:

1. Appropriate warnings should be erected to restrict public access through those parts of the reserve affected by the rifle range for the periods that the range is in use.
2. Parts of the area are subject to invasion by pine seedlings; a continuing program of rehabilitation is required for the former pine plantation.

**C52 Warrandyte/Kinglake nature
conservation link**

This proposal identifies a habitat link between the Yarra River at Warrandyte State Park, and the Kinglake National Park. It traverses a topographic gradient from an elevation of about 50 m on the Yarra, near Bend of Isles, to about 500 m on the Kinglake Plateau and supports a range of vegetation communities. The main purpose of this link is to provide a contiguous native forest corridor for the movement of fauna between the Yarra River valley, and the Kinglake Plateau.

The Melbourne Parks and Waterways program (see Introduction) is proposing to develop and enhance Melbourne's open space network from Port Phillip Bay to the Ranges. Its draft strategy identifies particular stream frontage reserves and other linear reservations, such as disused railways, as the frame of the network.

The Yarra Valley is a primary focus of Melbourne's open space. A reasonably continuous and, in places, quite wide public parkland strip exists along the Yarra River from Ivanhoe to Wonga Park. Upstream of Wonga Park to near Healesville, however, long reaches of the Yarra have no frontage reserve.

River and stream valleys provide the best potential framework for habitat links. However, other valleys are less well endowed with public land than is the Yarra.

Further development of the Sugarloaf Reservoir and associated Winneke water treatment plant would involve increasing

the pumping capacity from the river (planned to be constructed before 2010) and construction of the Little Watsons Creek storage (which remains an augmentation option). Melbourne Water has been buying land in the catchment to the Little Watsons Creek and now has a substantial landholding.

The most suitable site for the provision of a habitat link broadly follows the lower Watsons Creek valley. The proposed habitat link is indicated in detail on Map D. The frontage reserve along most of the creek and other Crown land, notably One Tree Hill and the eastern part of the St Andrews rifle range, and Happy Valley contribute to a substantial link between the Yarra River and the Mount Everard section of the Kinglake National Park. A major component of this link is land held by Melbourne Water, much of which is forested and little-disturbed, although some areas are partly cleared and others require some revegetation.

Watsons Creek frontage contains high quality remnants of riparian forest, which is depleted and often disturbed elsewhere in the region. An important component of the link is One Tree Hill which is proposed to be set aside as a fauna and flora reserve (see Recommendation C41 above).

The St Andrews rifle range is located at the western end of its reserve and is used by the Diamond Valley and Eltham rifle clubs. The portion of the reserve east of Rifle Range Road, identified as part of the habitat link, supports intact dry sclerophyll forest.

The Melbourne Water land varies in condition. Some areas, contiguous with One Tree Hill and the rifle range, are densely forested and in good condition botanically, and therefore provide good habitat. These areas carry mainly dry sclerophyll forest, with a transition from riparian forest along the drainage lines, low elevation forests on shallow stony soils near the Yarra River, to low foothill dry sclerophyll forests. Closer to Kinglake National Park, valley forest increases in extent, with broad-leaf peppermint - mealy stringybark heathy dry forests occurring as elevation increases into the park.

The identified habitat link follows the moist forests along valleys and includes the adjoining transitional vegetation, such that a range of microclimates and habitat types is maintained along a topographic and botanical gradient. The link should be managed to ensure that birds, arboreal mammals and ground fauna can have ready passage between localised areas, and also are able to traverse the whole link.

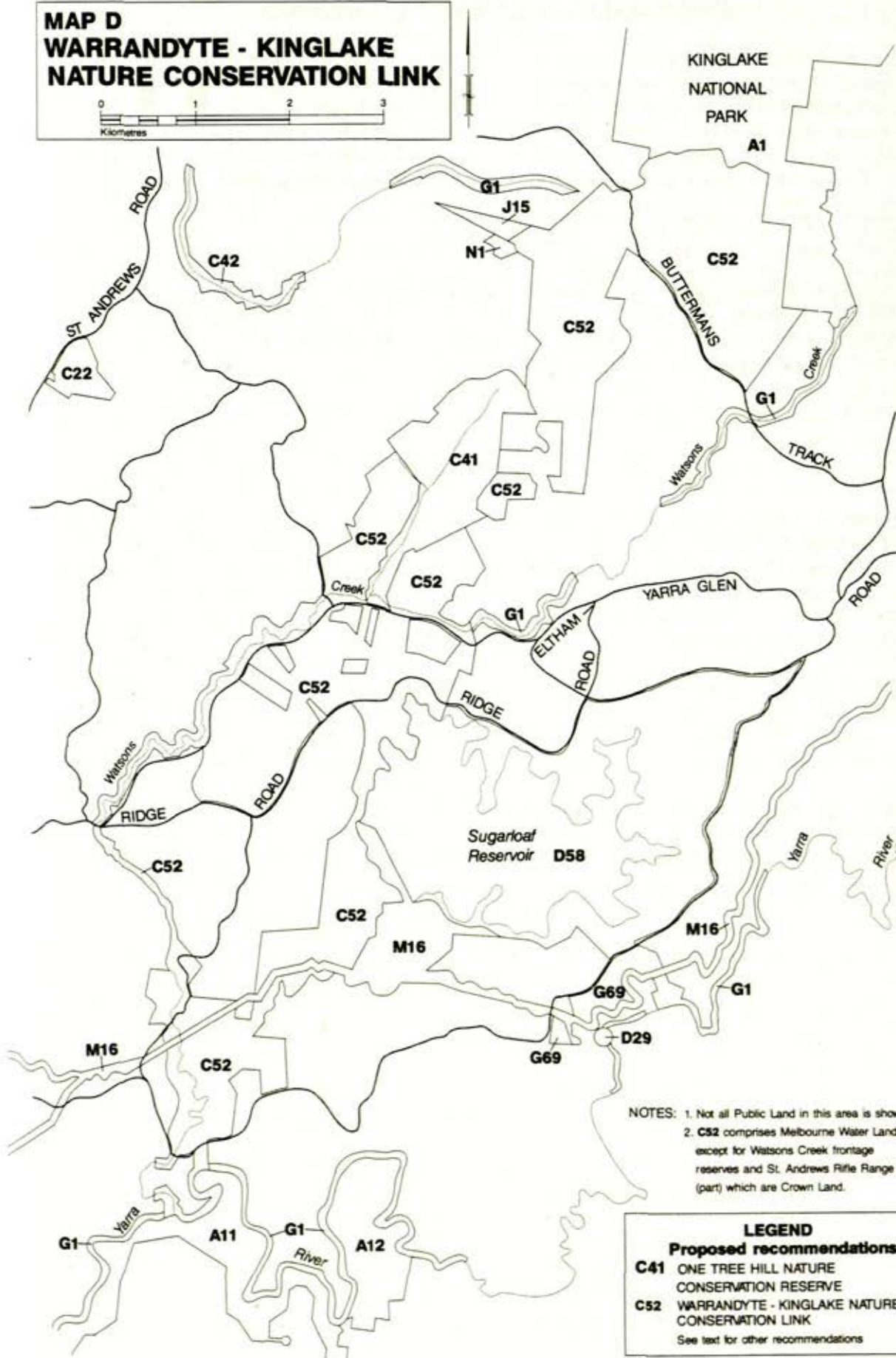
As indicated, the link includes land around Rob Roy Bridge that would be inundated by the proposed Little Watsons Creek Reservoir. If a decision is made to construct the reservoir, Melbourne Water should ensure that a 500 - 750 m wide habitat link is maintained around its western margin, above full supply level.

Recommendation

C52 That the Warrandyte/Kinglake area (of 1432 ha) shown on Maps A and D:

- (i) be managed co-operatively by the Department of Conservation and Natural Resources and Melbourne Water as a habitat link in accordance with the recommendation for nature conservation reserves outlined above
- that
- (ii) cleared or semi-cleared land within the link be revegetated using indigenous species
- (iii) if the Little Watsons Creek reservoir proceeds, Melbourne Water ensure that a habitat link around the western side of the storage is maintained
- (iv) if the Little Watsons Creek reservoir does not proceed, the Melbourne Water land within the link be transferred to and managed by the Department of Conservation and Natural Resources on a basis to be agreed between the two authorities.

MAP D WARRANDYTE - KINGLAKE NATURE CONSERVATION LINK



NOTES: 1. Not all Public Land in this area is shown.
2. C52 comprises Melbourne Water Land except for Watsons Creek frontage reserves and St. Andrews Rifle Range (part) which are Crown Land.

LEGEND

Proposed recommendations

- C41** ONE TREE HILL NATURE CONSERVATION RESERVE
 - C52** WARRANDYTE - KINGLAKE NATURE CONSERVATION LINK
- See text for other recommendations

MAP D WATSONS CREEK

ESSENTIALLY NATURAL CATCHMENTS

Following its Special Investigation of Rivers and Streams, Council in 1991 recommended that two areas in this study area should remain unaltered from their present condition and be managed as Essentially Natural Catchments. One, the O'Shannassy River catchment falls

within the proposed Central Highlands National Park. The other, Williams Creek is in State forest near Jamieson. These are recognised as overlays on existing land uses and are protected under the *Heritage Rivers Act* 1992 through management prescriptions.

Recommendation

C53 That the O'Shannassy River and Williams Creek Essentially Natural Catchments, indicated on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the Rivers and Streams Special Investigation in June 1991 and specified in the *Heritage Rivers Act* 1992.

SANDY POINT

Commonwealth land at Sandy Point on the eastern Mornington Peninsula is part of the Australian Navy's HMAS Cerberus training facility. It contains one of the few remaining substantial areas of relatively undisturbed native vegetation on the peninsula.

The range of vegetation communities represented here include coastal dune scrub, coastal banksia woodland, coastal grassy forest, coastal heathland, and swamp scrub.

The area is used mainly for training exercises without vehicles and is managed in a manner largely consistent with the maintenance of its nature conservation values.

Council believes that, in recognition of the area's important nature conservation values, the State Government should discuss with the Commonwealth Government the future use of this area with a view to permanent protection of those values.

The Draft Western Port Bay Strategy by the Westernport Regional Planning and Co-ordination Committee has recommended that the Department of Defence should develop a management plan for Sandy Point in consultation with the (Department of Conservation and Natural Resources) that addresses a range of environmental values and uses.

D. WATER PRODUCTION

Water supply catchments in the Melbourne Area, District 2, are very important in a State context. They provide all the water used in the greater Melbourne - Mornington Peninsula - Western Port areas, and most of that used in the Latrobe Valley for urban and industrial purposes. Irrigation water - a large part of that supplied to the lower Goulburn and Gippsland areas - is stored in Lake Eildon, or taken from the Thomson and Latrobe Rivers.

Since the Council's final recommendations in 1977 there have been many changes in relation to water production, and key ones are referred to below. The changes include comprehensive restructuring of the administration of water services. Every former water authority has been restructured, and the number reduced from 32 authorities to 12. Melbourne Water Corporation now has responsibility for water supply in virtually all of the Yarra and Western Port Basins (including the Mornington Peninsula but excluding the Tarago Water Board supplies to Warragul and Drouin). Kilmore, Broadford, Seymour, and Marysville are now supplied by the Mid-Goulburn Regional Water Board. The Latrobe Region Water Authority supplies Yarragon, Trafalgar, Thorpdale, and Erica as well as cities and industry in the Latrobe Valley. Several other new authorities manage one or more former town water systems.

Current management and use

The Melbourne Water Corporation system illustrates the range of catchment management approaches. The Corporation's 'core catchments' - O'Shannassy, Upper Yarra and Maroondah (and adjoining creeks), Wallaby, Toorourrong, and Yan Yean - are managed for water production, with some public roads and with recreation - limited in area and strictly regulated - as a secondary use in some areas. Water is provided to a large sector of Melbourne with the only treatment being disinfection, commonly by chlorination, when it is necessary'.

The Thomson Reservoir provides a long detention time, allowing settlement of suspended matter and bacterial die-off, before it enters the Upper Yarra Reservoir. In its forested public land catchment, timber harvesting and recreation, subject to track

closures and a limit on camping, are currently permitted.

At Yering Gorge, Melbourne Water has pumped from the Yarra River to Sugarloaf Reservoir since 1980. The Yarra catchment to this point includes the Lilydale, Warburton, Yarra Junction, Healesville, and part of the Dandenongs urban areas, intensive and extensive agriculture, and hundreds of kilometres of roading. Public land in the Yering Gorge catchment includes the majority of the proposed Central Highlands National Park which incorporates the Yarra 'core catchments', part of the Dandenong Ranges State Park which is used extensively for recreation, and some State forest used for hardwood production. Accordingly, this water, which provides about 17% of Melbourne's supply, is fully treated to World Health Organisation standards before entering the reticulation system.

In 1991, Melbourne Water took over management of the Tarago Reservoir, a major supply source for the Mornington Peninsula. Its catchment includes some 7580 ha of State forest, and about 3500 ha of farmland, mainly grazed.

Accordingly, since the early 1970s when all Melbourne's catchments were 'closed', there has been a substantial broadening in Melbourne Water's approach to catchment management, and that organisation has developed experience in harvesting water from catchments with a range of uses and the necessary levels of water treatment.

Other water supply catchments in the Melbourne District 2 Area, in West Gippsland and the Goulburn Valley, were listed in the descriptive report. These all have a multiplicity of land uses.

Catchment land uses

Recognising that the prime water-producing areas of the State coincide with the principal mountain and forested areas, and that these areas together with inland water bodies form major attractions for recreation, the Council has maintained that, in many areas, catchments can be managed for a range of uses consistent with the provision of adequate protection of the

water resources. Now that more hydrological research results and water quality analyses are available, it has become clear that there is a continuing need for efforts towards improving water quality through better catchment protection, particularly in domestic water supply catchments.

Recreational use of domestic water supply storages is in general not appropriate except where supplies are treated. Where it is permitted, recreational use must be carefully controlled to ensure adequate protection of water quality. Responsibility for this must remain with the water supply authority.

The Council realises that the optimum combination of land uses for catchments will vary from one land type to another. A particular use that may not impair the quantity, distribution, or quality of water yield under one set of circumstances may have a detrimental effect in another. Changes in land use, which could detrimentally affect the quality, quantity, or distribution of water supplied from a catchment, should only be made following full consideration of the benefits and disadvantages associated with the various land-use options. These considerations should take account of the interests of the groups likely to be affected by any changes as well as broader regional and State-wide issues.

Land use planning

Council notes that the land-use planning status varies between catchments in the study area. Twenty-six catchments have been proclaimed under the *Soil Conservation and Land Utilization Act 1958* (SC&LU Act), 16 of these since the 1977 recommendations. Eight water sources are no longer used, being replaced by better quality supplies, and four sources - Bunyip River, Beaconsfield Reservoir, Dee River, and Walker Creek - are maintained as reserve supplies.

The catchments to 26 diversions or storages have not been proclaimed, 18 of which are Melbourne Water installations. Council maintains that all domestic water supply catchments should be investigated. Where there is a multiplicity of uses in a catchment supplying water used for domestic, industrial, or irrigation purposes, the catchment should be recommended under section 5(1) of the *Land Conservation Act 1970* to be proclaimed under section 22(1) of the SC&LU Act. This will help ensure a uniform procedure for land-use planning within these areas.

An accelerated program for catchment proclamation was initiated as part of the Council's Statewide Assessment of Public Land Use report (1988), and the three catchments given priority in the Melbourne Area, District 2, have since been proclaimed.

In proclaimed catchments, and following consultation with the Land Conservation Council, a land use determination may be made for a catchment, under section 23 of the SC&LU Act.

This specifies the most suitable uses of all land in the catchment, and includes delineation of protective strips around storages and along major watercourses. Land use determinations have been completed for Lake Eildon, Delatite River, Tanjil River and Thomson Reservoir catchments in the Melbourne District 2 Area since the 1977 recommendations. Twelve land-use determinations in all have been prepared for the study area, although three are no longer in effect.

Other forms of catchment planning may also be relevant, or may be more appropriate in particular circumstances. Various alternatives were discussed in the Statewide Assessment of Public Land Use report. Further, The National Decade of Landcare Plan aims at providing the basis for co-operative identification of issues, priorities and action programs, which could include water supply catchment management.

The Council proposes that a State-wide program be developed in conjunction with the Departments of Conservation and Natural Resources and Planning and Development, for further planning of proclaimed catchments, including consideration of the above approaches.

Catchment land tenure

Council believes that in many situations it is not necessary or indeed practicable for a water supply authority to control and manage all land in its water catchment.

When water authorities control their catchments, it is generally the result of historical circumstances. The core catchments of Melbourne's supply system were vested in the then Board of Works, following serious outbreaks of water-borne disease last century. Subsequent governments have maintained that system, so that Melbourne consumers have had access to high quality water requiring minimal

treatment, and hence avoiding major treatment costs. As outlined above, Melbourne Water now also harvests substantial volumes of water from catchments that are not under its control.

Small water supply authorities have not had the resources to purchase, or manage, all the land in their catchments. They have been obliged to take water from catchments with a multiplicity of uses, hence the need for the catchment planning mechanisms mentioned above.

Elsewhere in these recommendations, the Council has proposed that the Maroondah, O'Shannassy, and Upper Yarra catchments form the basis of a Central Highlands National Park, and the Wallaby/Silver Creek catchments be added to the Kinglake National Park. The recommended management regime in these parks would not permit timber harvesting, and would require park zoning to strictly limit recreation in the catchments. Management of the proposed parks would be by co-operative arrangement between Melbourne Water and the Department of Conservation and Natural Resources, with Melbourne Water continuing to manage the catchments. This would effectively continue the present management of these areas, and would reflect both the importance of these areas for water supply to about 75% of Victoria's population, and the research results indicating the major water yield and potential water quality implications of changes in management, as discussed below.

Hydrological behaviour

A further consideration is the hydrological behaviour of a catchment. Melbourne Water has been carrying out a comprehensive experimental program of hydrological research on its catchments since the 1960s. The main objects have been to study the effect of forest operations on water quality, and the relationships between vegetation type and water yield, with emphasis on ash forests. A key result has been the estimation of water yield reduction occurring in ash forests following bushfire or logging and regeneration. Kuczera's (1985) study of a wide range of catchments in the Central Highlands indicates that, compared with yield from a pre-existing mature forest, there would be an initial increase, then flows would be sharply reduced to a minimum of about half at age 30, only returning to pre-fire yields after some 150 years.

In mixed species forests there is no observed reduction in water yield after fire, however

mixed species forests' response after clearfelling is uncertain.

Council considers that, in general, authorities with land management responsibilities within water supply catchments should be conscious of the implications of their management decisions on water production, and should consult, co-operate, and reach agreement with the water supply authority, and the Department of Conservation and Natural Resources, regarding the type, location, and timing of management activities.

Buffer zone around water storages and diversions

Where the water supply authority does not control all the land in its catchment, the authority should control and manage a buffer zone, such as that defined in the land use determination, around storages and diversion works. This buffer zone is separate from the protective strips along watercourses, which, although important for water supply protection, would not by themselves form a manageable unit.

In addition, the water supply authority should control and manage the storages and the areas on which capital works associated with water supply are situated, together with any other areas that may be needed for efficient management.

Each catchment and water supply system has individual characteristics and the determination of the buffer zone will need to take account of these differences. In determining the extent of the buffer zone, consideration should be given to factors such as ground slope, soil type, vegetative cover, adjoining land use, types of facilities available for treating the water, end-use of water, detention time in the storage, and the need to control public use of the storage and its immediate surrounds and for management access. The buffer zone should be large enough to reduce entry of most pollutants into the storage by way of filtration of overland flow, absorption through the soil, and assimilation in watercourses. The desirability of the buffer zone being a practical management unit should also be taken into account.

In some instances it may not be practical for the water supply authority to manage all, or part, of the buffer zone. In such cases agreement should be reached between the adjacent land manager and the water supply

authority. The agreement may include leaving the management of the buffer zone with the adjacent land manager on the basis that it would be managed with the prime object of protecting the water quality.

A 200-m land use determination buffer is designated around Lake Eildon. Where this abuts the present Fraser Park and Eildon State Park, management difficulties have arisen because activities such as camping and lighting fires may be carried out in the buffer zone, but would be inappropriate in the adjoining park. Further, the 200-m buffer zone is located above full supply level. However the reservoir normally operates below that level, exposing more foreshore area. This results in additional management difficulties as these areas are not covered by the regulations applying to adjacent land. It is proposed that the scheduled park boundaries be extended to full supply level (see Recommendation A9), and that Department of Conservation and Natural Resources rangers be empowered to act below that level. The 200-m buffer zone would remain, with the Rural Water Corporation being involved with the Department in the management of the buffer zone.

THOMSON CATCHMENT - WOOD VS WATER

The 48 220 ha catchment to Thomson Dam contains some 42 620 ha of State forest, part of the Baw Baw National Park (3330 ha), and 2270 ha of water surface. The forests comprise 15 800 ha of ash species and 26 000 ha of mixed species. The ash forests are a combination of alpine ash and shining gum montane forests, and mountain ash wet sclerophyll forest. The mixed species forests include mountain grey gum and messmate damp sclerophyll forest, silvertop foothill forest, and broad-leaf peppermint heathy dry forest. These forests contain substantial timber resources and, in accordance with the Code of Forest Practices, the net productive area of ash species is 12 600 ha, and of mixed species is 7970 ha. About 1000 ha, mainly ash forest, has recently been logged.

Timber production from this catchment is, to some extent, competitive with water production as discussed below. A recent study of the relative economic values of timber and water production in the Thomson catchment was commissioned jointly by Melbourne Water and the Department of Conservation and Natural Resources. The report 'Evaluation of the economic values of wood and water for the

Thomson catchment' by Read Sturgess and Associates *et al.* (June 1992) is available from Melbourne Water and the Department. Timber yields and volumes were estimated for eight timber harvesting options - no logging, harvesting at various ages, or thinning (see Table 5) - and the resulting streamflows were estimated.

The consultants made various assumptions which are discussed in their report. They also pointed out that, as their study was purely an economic comparison, other important matters need to be considered. These include:

- the implications of any change from the *status quo* for employment levels and the regional economy;
- the implications for conservation and recreation values, and downstream uses such as freshwater flushing of the Gippsland Lakes

They suggested further studies of these matters, and of other harvesting options. Subsequent studies have been initiated.

Findings

Applying the model developed by Kuczera to the Thomson catchment, from a pre-existing mature forest water yield of 11.9 ML (megalitres) per hectare per year, fire or logging would be expected to cause a sharp reduction to about 5.8 ML/ha/yr over some 30 years, then a gradual increase to the pre-existing flow rate over 120 years.

The Thomson catchment is available at present for timber production. Any change in catchment conditions that increased streamflow would provide additional water to meet growth in demand, and could allow the next augmentation of Melbourne's water supply system (see below) to be delayed, leading to savings in both cases. Any corresponding reduction in timber availability would have a cost, as it all contributes to the regional sustainable yield volumes, and timber supplies and associated employment.

The consultants estimated timber and water values on a common basis - in the catchment - using 'shadow' prices developed in several other studies, and derived by working back to a catchment basis from a known price. For water, the estimated price used in analyses was \$530/ML. In the case of timber other studies concluded that a true value in the forest could

be estimated by adding to the set royalty value. This differed for each timber grade, and the consultants' analyses used 33%, 41% and 61% above current royalty values for A/B, C and D grade logs respectively.

The results suggested that economic output would be increased with all the harvesting options considered, compared with the *status quo*. Expressed as net present values, Table 5 lists the more economically favourable options, in order. The net present value is the value today, net of costs, of the stream of income from water and timber, over all future years. It is calculated by estimating the income (in 1992 dollars) for each future year, discounting future income back to the present, and totalling for all years.

Table 5

**NET PRESENT VALUE OF TIMBER
HARVESTING OPTIONS COMPARED
WITH THE STATUS QUO**

Thomson Catchment Study

Big strip (35m corridors harvested, with long rotation)	\$169M
No logging	\$147M
200 yr rotation with uniform thinning	\$113M
200 yr rotation	\$102M
120 yr rotation	\$ 45M
80 yr rotation with uniform thinning	\$ 19M
40 yr rotation	\$ 4M
<i>Status quo</i> - 80 yr rotation	\$ 0M

For a standing forest, economic output would apparently be increased the most by either increasing rotation length together with greater use of strip or uniform thinning, or by ceasing logging. There is insufficient evidence from this study to determine categorically which of those changes would yield the greatest net social benefit.

Discussion

The levels of net present values vary substantially if a higher or lower water price is used, and vary to a lesser extent with the timber price. The consultants made the point that changing the price level has very little effect on the relative order of the options. They estimated water price would have to be less than one third of their estimated price - \$530/ML - before the *status quo* (80 yr logging rotation) became more economically favourable

than the best option - big strip (corridor harvesting). The capital cost of the Thomson Dam was considered 'sunk' and thus was not treated as a cost of current water production. The costs of new dams were counted, when needed under each harvesting option.

The Council's response to the report is as follows.

Along with all public land in the study area the Thomson catchment was evaluated for its land system representation, vegetation and fauna in relation to those in existing parks and nature conservation reserves. However, as it would not contribute significantly to overcoming deficiencies in those reserves, Council considered it should not be recommended as a park or conservation reserve.

The consultants' report is primarily a report to the Department of Conservation and Natural Resources and Melbourne Water. Further work has been initiated, to consider additional options and the social and environmental impacts of various options. Ultimately, it is a matter for the Minister for Natural Resources, and the Government, to decide the central issue: whether there should be a change from the *status quo*.

The Council recognises there has been some criticism of the consultants' methodology. There are always assumptions and judgements made in such economic studies. However the Council is satisfied that the methodology used is sound, the analyses are comprehensive, and the assumptions are reasonable, within the limits explained in the report, and subject to the qualifications outlined in Appendix III, which also provides further interpretation of the report.

Several options considered by the consultants such as the 'big strip' option and uniform thinning at age 20, may have important environmental implications. The Council is aware that further work in progress includes assessment of such implications.

All rotation options considered assume there will be no major bushfires in the catchment, as they kill ash species and regenerate a dense crop of seedling trees, initiating the whole flow reduction process once more. While fire protection and fire fighting are now much more effective than in 1939, the risk of fire still remains. For example, in 1982/83 some 14 600 ha of Melbourne Water's catchments were burnt.

The 120- and 200-yr rotations, with their reduced logging yield, must be considered in the light of the existing commitments of sawlogs to the timber industry from this area, and the employment implications of reducing this timber availability in the short term. There is also the risk of fire over the next 110 years which could undo the gradual forest ageing and resultant flow increases.

Those comments also apply to the no-logging option, except that it would have a greater impact on timber resource availability than the extended rotations. From a simple comparison of the consultants' cash flow data for the no logging and *status quo* options, there appears to be a delay of 30 to 40 years before break-even point - that is, before the returns from the extra water exceed the income foregone through stopping timber harvesting.

The question of future timber harvesting in the Thomson catchment also raises broader issues, for example, the impact of softwood substitutes on hardwood production, and the funding of new plantations. The issue of plantation timber substitution is further discussed in Chapter E.

These, and the other matters referred to above, are worthy of extra study prior to any decision being made. Given that further studies are now being undertaken and the need for some clarification of aspects of these options, Council's view is that the consultants' report alone is not sufficient to justify adoption of a particular option at this stage.

WATER QUALITY

It is possible to improve the quality of water by partial or complete treatment - at a cost. Complete treatment involves sedimentation, filtration and disinfection, commonly by chlorination. Partial treatment is usually disinfection only. However the higher the original quality of the water, the cheaper and more efficient is the treatment and, in most cases, the more acceptable the end product.

In many catchments it is already difficult to maintain existing water quality. This problem is likely to become greater as pressures to allow various forms of land development and use of natural resources increase. Even with properly planned and controlled land use in catchments most water supply authorities consider it necessary to at least disinfect water supplied from their storages. All Melbourne metropolitan systems have the facility to chlorinate water, and elsewhere in Victoria,

79% of the population received water from supplies that have disinfection facilities. In the study area, 31 of the 38 non-Melbourne Water systems employ such treatment.

Domestic water quality is an important public health issue. The following provides an overview of monitoring results. The report 'Drinking Water Quality - Victoria 1984-1989' (DCE, 1991) noted that only 10-16% of the non-metropolitan population receives water supplies that comply with World Health Organization bacteriological standards. That level, although low, has shown an improving trend (except in 1988/89). However, 43% of the non-metropolitan population regularly received water which contained indicator organisms. For metropolitan supplies, derived largely from protected catchments, the less rigorous National Health and Medical Research Council (NHMRC) criteria were applied, and virtually all supplies sampled met these criteria except for the Healesville and Upper Yarra zones.

In relation to other quality criteria, Appendix IV (from the same report) summarises physical and chemical quality. The results show that a significant proportion of the non-metropolitan population was supplied with water which did not meet the World Health Organisation's guidelines for aluminium, iron, colour and trihalomethane levels.

For other parameters in the study area, water supplies to Emerald, Cockatoo and Noojee were more acidic, on average, than the standard limit. Noojee had an average value for colour of 193 colour units compared with the guideline value of 15. Erica and Thorpdale supplies had average manganese levels well above the standard. Alexandra and Korumburra had average trihalomethane levels which did not meet the guideline.

In the Melbourne Water system, several zones supplied water which on average did not meet the NHMRC guidelines for colour, and 3 zones (Yarrambat, Whittlesea, Hurstbridge) supplied water that equalled or did not meet the guidelines for iron, on average.

Sources of poor water quality

The failure of some supplies to meet bacterial water quality standards generally reflects a catchment problem. Organic matter, usually from the catchment, must be present, while the actual source of bacterial contamination can be from land uses, human activities or fauna in the

catchment, or from birds fouling water stored in reservoirs or open service basins.

With respect to the physical and chemical criteria, colour, turbidity, aluminium, and most other ions are derived from the catchment. High copper and iron levels are often derived from the reticulation pipes. Trihalomethanes are formed in the reticulated supply when high levels of chlorine used for disinfection react with organic compounds, especially those that colour water. For bacteria, and other parameters of health significance, the designated standard indicates potential rather than actual health effects.

Water quality trends

Another recent report - the State of the Environment Report on Agriculture (1992) - contains summaries of trends in water quality in rivers and streams generally, rather than just water supply catchments. As an example, results from that report refer to 5 sampling sites along the Yarra River upstream from the Yering Gorge offtake to Sugarloaf Reservoir, within a catchment supplying domestic water. For each parameter, the condition is rated as either excellent, good, moderate, poor or degraded, and the trend over 10 years (or more) is also listed - whether improving, stable, or deteriorating.

For suspended solids, 3 sampling sites had poor quality water with a stable trend, and one site had degraded, stable quality. Turbidity values - two excellent, two poor - were stable or deteriorating (one at each level). Total nitrogen levels were poor and stable for 4 sites, and poor but improving at one site. Total phosphorous level was poor and stable at Yering Gorge, while 4 upstream values were moderate - two improving, one stable and one deteriorating. Overall, while some sites have good or improving quality there is not an evident trend towards improvement over the 10 year period.

Council recognises that other water supply authorities will need to consider upgrading their treatment facilities in the future. In order to provide for this requirement, Council believes it is important for the government to continue to apply long-term policies to maintain water supply of a satisfactory quality.

In order to safeguard water quality, and the quantity and timing of yield, management must be directed towards avoiding loss of infiltration capacity, damage to other hydrologic

properties, soil erosion, and contamination from chemical or biological sources.

Proper management of land uses within domestic water supply catchments is extremely important and recognition must be given to the need for high levels of protection. Values such as water yield, quality, and flow regime must be of major concern when implementing recommendations for public land within such catchments. The Council recognises the need for appropriate guidelines specific to water supply catchments, and for research to provide additional information.

ADDITIONAL WATER NEEDS

Future water needs for domestic, stock and irrigation purposes may require the construction of additional water storages.

In particular, the Melbourne Water Resources Review Panel has reported on several options for the Melbourne supply system. This Panel was established to review the management of Melbourne's water to the year 2020, including a strategic study of supply options for the future.

Its report makes several references of relevance to the Melbourne District 2 Area, including possible strip thinning in catchments; proposals to harvest additional water from Cement Creek and Lower Yarra (Yering Gorge); construction of a reservoir on Watsons Creek to store additional Yarra River water; and investigation of new diversions from the Acheron River, the Big River (above Lake Eildon), and the Black and Upper Goulburn Rivers.

Strip thinning would be inappropriate in the Melbourne Water catchments recommended for inclusion in the Central Highlands and Kinglake National Parks, because of the substantial habitat disruption they would cause. The Council's response to proposals for new diversions or storages within the recommended Central Highlands National park - including Cement Creek and Acheron River - has been discussed in Chapter A.

Following the Council's final recommendations in 1991 arising from the Rivers and Streams Special Investigation, the Yarra River (from Warburton to Warrandyte) is a Heritage River under the *Heritage Rivers Act* 1992 (see Chapter G).

Under the provisions of that Act, new (including increased) diversions, such as those

associated with an off-stream storage at Watsons Creek, would only be permitted if their volumes, timing, and offtake did not significantly impair Yarra River fish habitat conditions, canoeing quality or scenic landscape values.

The Big River is also a Heritage River. The *Act* provides that for the Big River, any new diversion of water would only be permitted if its volume and timing, and the design of the offtake structure did not significantly impair in-stream habitat conditions, the passage of in-stream fauna, or reduce scenic landscape value. The Council's recommendations explain that this is considered feasible.

The Black River meets the Upper Goulburn River within a recommended 'River Zone' (see Chapter E). The primary aim of management in river zones is to protect natural and scenic values. Provided measures were taken to protect any natural values at the site, and to minimise the scenic impact, this recommendation would not prevent construction of a storage and/or diversion

works at this site.

In planning for new water proposals, the possible effects of storages and their water releases on ecosystems, in particular the effects on estuaries and on fish and wildlife habitat downstream - including effects on free passage of migratory fish species, should be determined and taken into account. A related matter is the allocation of environmental flows down the Thomson River, also a Heritage River for the reach between the Thomson Dam and Cowwarr. The Thomson River Downstream Environmental Monitoring Committee is in the process of finalising its recommendations for Thomson River flow releases.

The Council recognises that further augmentation of water supplies in the study area will probably be necessary, but cannot make specific provision for those developments until definite proposals are made. In most cases an Environment Effects Statement is required as part of the planning of any new major storage.

WATER PRODUCTION

Recommendations

DI-D13 That, in the case of the locations listed below and shown on Map A (all these locations being within catchments that have been proclaimed and for which land use determinations have been made), the following areas:

- (a) the storage areas
- (b) diversion works
- (c) associated facilities
- (d) the buffer zones around diversion works and storages, as defined in the land use determination
- (e) any other allotments as considered necessary

be used for:

- (i) water supply purposes
- (ii) other activities permitted by the water supply authority after consultation with the Department of Conservation and Natural Resources and the Environment Protection Authority

and that, unless otherwise securely reserved, these areas be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* for water supply purposes, and be managed by the water supply authority named.

(continued)

D1-D13 - Water Production (continued)

Notes:

1. The primary object of management of the buffer zone must be to protect water quality. Subject to this principle, the water supply authority may permit other secondary uses on the buffer. In such cases, the principles of management must be agreed upon by that authority and any other authorities concerned.
2. In some instances it may not be practicable for the water supply authority to manage all or part of the buffer zone. In such cases agreement should be reached between the appropriate land management authority and the water supply authority. The agreement may include leaving the management of the buffer zone with the adjacent land management authority on the basis that it would be managed with the prime object of protecting the water quality.
3. The Council's earth resources policy (see Chapter L) includes the provision that in water production areas (that is, the storages and buffer zones), exploration and extraction of minerals, petroleum, stone, and groundwater should require the consent of the manager - in this case, the water supply authority.

D1 Hazel and Harpers Creeks offtakes, Mid-Goulburn Regional Water Board

D2 Eildon Reservoir, Rural Water Corporation

D3 Delatite River diversion, Mansfield and District Water Board

D4 McCraes Creek offtake, Melbourne Water

D5 Bunyip River offtake, Melbourne Water

D6 Upper Tarago diversion (Peterson Weir) Tarago Water Board

D7 Tarago Reservoir, Melbourne Water

D8 Thomson (stages 1 and 2 diversions), Melbourne Water

D9 Thomson Reservoir, Melbourne Water

D10 Trigger Creek diversion, Latrobe Region Water Authority

D11 Tanjil River, Latrobe Region Water Authority

D12 Blue Rock Reservoir, Rural Water Corporation

D13 Moondarra Reservoir, Latrobe Region Water Authority

Recommendations

D14-D57 That, in the case of the locations listed below and shown on Map A (all these locations being within catchments for which no land use determinations have been made), the present tenure and management of public land continue for the time being

and that, once a land use determination has been made, the following areas:

- (a) the storage areas
- (b) diversion works
- (c) associated facilities
- (d) the buffer zones around diversion works and storages, as defined in the land use determination
- (e) any other allotments considered necessary

be used for:

- (i) water supply purposes

(continued)

D14-D57 (continued)

- (ii) other activities permitted by the water supply authority after consultation with the Department of Conservation and Natural Resources and the Environment Protection Authority

and that, unless otherwise securely reserved, these areas be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* for water supply purposes, and be managed by the water supply authority named.

Notes:

1. The buffer should be wide enough to prevent direct pollution, to filter overland flow of water, and to control access. Its width will vary to suit differences in ground slope, soil type, vegetative cover, adjoining land use, and type of facilities available for treating the water.
2. The primary object of management of the buffer zone must be to protect water quality. Subject to this principle, the water supply authority may permit other secondary uses on the buffer. In such cases, the principles of management must be agreed upon by that authority and any other authorities concerned.

D14 Goulburn River diversion (Seymour),
Mid-Goulburn Regional Water Board

D15 Falls Creek Reservoir, Mid-Goulburn
Regional Water Board

D16 Sunday Creek Reservoir, Mid-Goulburn
Regional Water Board

D17 Hellhole diversion, Melbourne Water

D18 Mud Creek diversion, Melbourne Water

D19 Stony Creek diversion, Melbourne Water

D20 Silver Creek diversion, Melbourne Water

D21 Wallaby Creek diversion, Melbourne
Water

D22 Yea River diversion, Yea Water Board

D23 Goulburn River diversion, Shire of
Alexandra

D24 Rubicon River diversion, Shire of
Alexandra

D25 Steavenson River diversion (Buxton),
Shire of Alexandra

D26 Beauty Spot Reservoir, Mid-Goulburn
Regional Water Board

D27 Steavenson River diversion (Marysville),
Mid-Goulburn Regional Water Board

D28 Brewery Creek diversion, Mansfield and
District Water Board

D29 Lower Yarra - Yering Gorge, Melbourne
Water

D30 Donnellys Creek diversion, Melbourne
Water

D31 Sawpit Creek diversion, Melbourne Water

D32 Maroondah Reservoir, Melbourne Water

D33 Grace Burn diversion, Melbourne Water

D34 Coranderrk Creek diversion, Melbourne
Water

D35 Cement Creek diversion, Melbourne
Water

D36 O'Shannassy Reservoir, Melbourne Water

D37 Armstrong (West) diversion, Melbourne
Water

D38 Armstrong (East) diversion, Melbourne
Water

D39 Starvation Creek diversion, Melbourne
Water

D40 McMahons Creek diversion, Melbourne
Water

D41 Upper Yarra Reservoir, Melbourne Water

D42 Tomahawk Creek, Melbourne Water

D43 Deep Creek diversion, Tarago Water
Board

- | | |
|---|--|
| D44 Loch River diversion, Tarago Water Board | D51 Little Narracan Creek diversion, Latrobe Region Water Authority |
| D45 Beaconsfield Reservoir, Melbourne Water | D52 Yallourn storage, State Electricity Commission |
| D46 Labertouche Creek offtake, Tarago Water Board | D53 Tennent Creek (Candowie Reservoir), Westernport Water Board |
| D47 Bunyip River diversion (Koo-Wee-Rup), Melbourne Water | D54 Candowie Reservoir (North Arm), Westernport Water Board |
| D48 Rollo Creek Reservoir, Latrobe Region Water Authority | D55 Lance Creek Reservoir, Wonthaggi - Inverloch Water Board |
| D49 Sunny Creek diversion, Latrobe Region Water Authority | D56 Bellview and Coalition Creek storages, Korumburra Water Board |
| D50 Narracan Creek diversion, Latrobe Region Water Authority | D57 Ruby Creek Reservoir, Leongatha Water Board |

Recommendations

D58-D61 That, in the case of the following off-river storages which have small areas of local catchment, the storages and their associated reserves remain under their existing tenure and control. In these cases no proclamation is necessary.

D58 Sugarloaf Reservoir, Melbourne Water

Filled with Yarra River water pumped from the Yering Gorge offtake (Recommendation D29), this reservoir is open for limited public recreational use. All water outflows to the northern Melbourne suburbs are fully treated at the adjoining Winneke Treatment Plant. Part of this area is included in the Warrandyte - Kinglake nature conservation link (see Recommendation C52).

D59 Silvan Reservoir, Melbourne Water

This reservoir and local catchment supply Melbourne's eastern, and if required central and western suburbs. Water is diverted here from the O'Shannassy and Upper Yarra Reservoirs. Its water is effectively untreated and its catchment, closed to public access, retains representative examples of damp sclerophyll forest, foothill forest, and heathy woodland communities. The catchment abuts the proposed Dandenongs State Park. The area's nature conservation values should be protected, and the area managed in consultation with the managers of the adjoining State Park.

D60 Cardinia Reservoir, Melbourne Water

The Cardinia Reservoir was constructed in response to the 'Public Works Inquiry into Melbourne's Future Water Supply', being completed in 1973. Together with its immediate catchment it covers 2800 ha. It is essentially an off-river storage linked to the Upper Yarra Reservoir and other sources via the Silvan Reservoir.

The area has important and representative examples of damp sclerophyll forest, foothill forest, and heathy woodland communities; an occurrence of mealy stringy-bark (*Eucalyptus cephalocarpa*), a species whose distribution is much reduced, and an unconfirmed record of a threatened subspecies of the purple eyebright. It also has a diverse assemblage of birds including a record of the white-bellied sea-eagle and a number of regionally uncommon species. It is of particular value as a closed area during the duck season, has a large population of eastern grey kangaroos, and also long-nosed bandicoots. The botanical and faunal values of the reservoir's immediate catchment should be protected.

D61 Devil Bend Reservoir, Melbourne Water

The catchment includes relatively undisturbed areas of coastal grassy forest, swamp gum, and associated wetland communities of both botanical and faunal significance. It is an important drought

and duck hunting refuge for water birds. The vulnerable grey-crowned babbler (parts of the last remaining population south of the Great Divide) and the rare blue-billed duck and Baillon's crane have been recorded. These should be protected.

Heritage Rivers

Recommendation

D62 That, for the Yarra, Goulburn, Thomson, and Big Heritage Rivers, any proposals for water supply augmentation be in accordance with the provisions of the *Heritage Rivers Act* 1992 and with the other recommendations approved by government following publication of the final recommendation for the Rivers and Streams Special Investigation in June 1991.

E. TIMBER PRODUCTION AND STATE FOREST

SAWN TIMBER PRODUCTION

The national situation

Various factors are bringing about structural change in the wood and wood products industry in Australia. Some are related to policy decisions, but the predominant influences are changes in domestic and international market conditions.

Perhaps the most significant factor has been the development, both in Australia and elsewhere, of commercial softwood plantations for the production of sawn timber. The traditional markets for hardwood sawn timber produced from native forests are faced with increasing competition from locally produced and imported softwood timber products. In addition, supplies of hardwood timber are reducing Australia-wide.

Other materials are also competing with hardwood sawn timber, for example, concrete in flooring and bridges, bricks in house cladding, steel in house frames, and aluminium in window frames. These changes, if viewed from a broader environmental perspective, may be undesirable, but are already occurring as a consequence of changes in community preferences and technology. As such, they have significant implications for the wood-processing industry.

The forecast increase in availability of softwood sawlogs and their competitive price may cause further displacement of hardwood in traditional markets and allow an expansion of the sawn timber industry to replace imports. At the present time, 80% of sawn timber imports are softwoods.

There is also increasing pressure on the Australian industry from other countries, such as New Zealand, the United States and Chile, which have extensive softwood resources. These countries are currently expanding their export markets and one of the target countries is Australia.

Plantations of both softwood and hardwood, domestic and overseas, and the move from old-growth forests to regrowth forests can be expected to play increasingly important roles in changing the structure of the Australian industry. There are currently about

1 million ha of plantations in Australia, of which around 900,000 ha are softwood.

Plantations offer advantages over native forests because of their high productivity, centralised resource with low transport costs to mill, controlled quality of product and security of supply. Their main disadvantages are the costs of establishment, availability of suitable land, financial returns on investment, high levels of maintenance and management, and the risk of failure. Further, current hardwood plantations are considered to have poor potential for economic sawlog production; they are, however, suitable for producing short-rotation pulpwood.

An indication of the extent that softwoods could substitute technically for hardwoods can be found in South Australia where, because the native forests have negligible timber-production value, 91% of the sawn timber market is met by softwoods. This compares with the current average for Australia of about 60%. In its 'Forest and Timber Inquiry Final Report (Overview)' in 1992, the Resource Assessment Commission (RAC) suggests that softwood plantations in Australia can supply our domestic requirements for softwood timbers and, under existing management arrangements, a surplus of softwood sawlogs is predicted for early next century.

The report noted that about 11.5 million cu.m of hardwood logs and 6 million cu.m of softwood logs are harvested each year from Australian forests and plantations. About half of the harvested wood is used as sawlogs and veneer logs; the remainder is used as pulpwood.

Domestic production of wood and wood products meets about two-thirds of the total Australian consumption. Table 6 indicates the turnover and trade balance for various sectors of the wood and wood products industry.

Australia exports about one-third of its annual forest harvest, mainly as hardwood woodchips. Nevertheless, the nation runs a significant balance of payments deficit in forest and timber products. In 1990-91, exports of forest and timber products amounted to \$596 million and imports amounted to \$1928 million, resulting in a trade deficit of \$1332 million.

Table 6

**AUSTRALIAN WOOD AND WOOD
PRODUCTS INDUSTRY (1988-89)**
(\$ million)

Sector	Turnover	Trade balance ¹
Sawmilling	1781	-500
Plywood and panels	811	-106
Woodchips	365	+367
Pulp and paper	2166	-1126

Note:

1. Negative sign indicates net imports; positive sign indicates net exports.

Source: Resource Assessment Commission (1992)
Forest and Timber Inquiry Final Report
Overview.

The future of the Australian hardwood sawn timber industry therefore depends on supplying niche markets within the seasoned structural timber market where strength is required, in applications requiring durability and weather resistance (such as decking) and in expansion into markets requiring appearance grade timbers for furniture, feature veneers, window frames, mouldings and a range of other value-added products. Also, the expansion of industry into overseas markets is a substantial further opportunity to ensure continued viability. The RAC further concluded that, with appropriate product development and marketing, Australian hardwoods would be eagerly sought by other countries because of their unique properties.

David Mayer of Simons Strategic Services Division in Vancouver, (British Columbia), in 1990, noted that:

'Upper grades of Australia's hardwoods offer the greatest potential for export to niche markets in the Pacific Rim. They are unique in appearance and offer excellent machining and utility properties. They can command higher potential for value adding than softwoods and hence justify any added burdens of marketing and transportation.'

Globally, hardwood sawmilling is undergoing significant changes, especially influenced by factors such as the dramatic dislocations in traditional supply regions, notably Thailand and Malaysia.

Thailand has imposed total prohibition on hardwood log exports including very severe penalties on those caught logging illegally. Malaysia has achieved less dramatic

conversion curtailment of its industry via export tariffs on lumber. Brazil is struggling to resolve the world concerns of the well publicised destruction of its forests on the one hand and the short term needs of cash crops for its people from cleared land. Over-reactions by the consuming public, notably in Europe has virtually placed all dark hardwoods - regardless of country of origin - on the endangered list.'

Economic trends may also increase the market price of structural oregon timbers from the United States of America, compared to hardwood beams.

Further, H.A. Simons Ltd *et.al.* (1990) in the document 'Analysis of Market Prospects for Tasmanian Forest Industry Products', noted that:

'In the short term, a significant increase in demand for eucalypt could occur if consumers turn away from imported hardwoods that are not logged on a sustained basis.'

Generally, the supply of decorative wood of any kind, such as mahogany, lauan, oak and others is diminishing. Large markets for decorative hardwoods exist in Japan, the UK and in Europe. The scope of additional volume developed in Tasmania should not be difficult to sell in these very large markets. However, eucalypt is not well known outside of Europe. In order to establish a demand, some promotion may be necessary to outline the workability and the beauty of the wood. Also, continuity of supply must be assured if customers are to be interested in this product.

The only competition for these boards will be other Australian eucalypt producers, but demand for select material is likely to exceed supply.'

The hardwood sawlog industry, however, faces serious impediments to improved export performance, among them the high costs of international marketing and the dominance of the industry by small to medium-sized producers. Further, technological improvement and investment are required for hardwood drying and processing facilities.

On the basis of information provided to this Council, it would appear that the scenario outlined above is recognised by both conservation and industry groups. The difference seems to lie in the predicted outcomes of the structural change that is taking

place. On the one hand, conservation groups argue that the hardwood sawlog industry based on native forests will virtually disappear over the next 10 years or so and be replaced by softwood and hardwood plantations. The industry maintains that it is responding to the change by moving into value-added products utilising kiln-dried hardwood (both ash and mixed species eucalypts) and that it is developing new markets (both domestic and overseas) for a wide range of products based on timber from native forests.

The Victorian situation

A recent report by the former Department of Conservation and Environment (DCE) entitled 'Sawlog Value Adding Survey of East Gippsland Timbers: Market Opportunities for Victorian Hardwood Timber', examines market opportunities for high value products and the changes needed to realise those opportunities.

The report notes that considerable potential exists for value-added products from Victorian hardwood timbers, mainly within the many small niche markets and involves competing with imported timbers and non-timber products, particularly metals. The best opportunities occur where Victorian hardwoods have a comparative advantage over pine, imported hardwoods and non-timber products. Their properties of strength, durability and hardness, for instance, in appropriate applications, cannot be matched by pine. The development of technical expertise within the industry and broad economic and environmental benefits may also flow from the use of local hardwoods rather than imported rainforest timbers and metals.

The report also notes that a change in industry's mode of operation will enhance other opportunities. A customer-oriented approach with greater emphasis on marketing, product development and the assurance of quality will also improve marketing effort. There are other non-market related factors which influence the potential for value-adding use of Victorian hardwood, and these are also discussed in the report.

In his paper in 1992 - 'Future Prospects of the Victorian Hardwood Industry', N. Huon of the Victorian Association of Forest Industries noted the divergence of opinion about the future prospects for Victorian hardwood. At one end of the spectrum, a number of conservation groups are suggesting that domestic and overseas softwood will supply

virtually all structural markets at the expense of hardwood timbers. They consider that the shift to plantation timbers will mean that only small volumes of specialty hardwoods will be marketable within the next ten to fifteen years. On the assumption that the hardwood industry is in decline and will only be small in the future, conservation groups are advocating a phase out of all timber harvesting from native forests over the next five to ten years. (In 1989 the then Department of Conservation Forests and Lands calculated that some 300,000 ha of good quality farmland would be required if all hardwood timber supplies were to come from plantations).

At the other end of the spectrum there are those who insist that hardwood will maintain traditional (house framing and sub-floor) markets as long as producers continue to do what they have done for the past 100 years - except that they might do it a little better. Such a view disregards the significant reduction in the market share of hardwood in the framing market over the past few years due, in part, to the fluctuating housing market, which hardwood processors are unable to expand into during boom periods due to constraints on the availability of resources.

It is clear that both of these views represent the extremes of a very complex issue. However, the Association recognises that two clear facts emerge:

First, Victoria has a well developed softwood plantation estate on about 212,000 ha of public and private land. As a result, the availability of softwood timbers is increasing dramatically, such, that by 2010 the volume available from both public and private plantations will almost triple the current level. This trend has been apparent for the last 20 years. It has therefore been clear that the hardwood sawmilling industry would face fundamental change during the late 1980s and 1990s. These changes are now occurring as softwoods compete successfully in traditional hardwood markets. While hardwood will maintain an advantage in specific sectors of the framing market, it is unlikely that all the available volume will be absorbed by traditional markets.

Second, the hardwood sawmilling industry is now responding to this challenge, although it is fair to say that the response has been slow. There are, however, reasons for this.

* Until recently, the demand for unseasoned hardwood has been strong so there has been little incentive to change.

- * Production for traditional structural markets is a relatively simple operation and can be achieved with modest capital expenditure. Logs can be harvested from the forest and delivered as green sawn timber to a housing site within a matter of days.
- * The investment required to exploit further value-added opportunities, both in terms of capital equipment and working capital, is substantial and somewhat daunting for small businesses in the face of a threat that, until recently, has seemed remote.
- * The timber industry is very fragmented and fairly conservative. In addition, funding for training and research and development activities has been inadequate for comprehensive product and market development projects.

Under the Chairmanship of Professor David Stokes of Deakin University, the Victorian Wood Products Working Party held seminars in September 1992 to aid development of a Victorian Wood Products Strategic Plan. Many of the issues raised in this chapter are reinforced by the papers presented to the seminars.

There is no doubt that the Victorian industry is responding to the changes that are taking place both at the domestic and international levels. Some \$60 million additional investment and product development in value-adding has occurred between 1987-1991. This is in response to the increased security of supply resulting from the introduction of 15-year sawlog licences in 1987 and other initiatives undertaken under the Timber Industry Strategy (discussed later). These investments are being driven by market pressure and, as in other industries, most producers are now following the early innovators. As a consequence, 25% of hardwood timber was being processed beyond the green stage in 1991, compared with 5% in 1987.

Investments include mill rationalisation, new milling and machining equipment, air drying of sawn stock, kilns, pre-driers, and reconditioners. Between 1990 and the end of 1992, at least 10 Victorian companies will have built new hardwood kilns. Much of this investment has occurred at a time when many industries are contracting due to reduced tariff protection, the worst housing downturn in Victoria in 30 years, and the worst recession in 60 years.

Replacement of imported timbers, and in particular tropical rainforest timbers, provides a very large potential market for local hardwood timbers.

The report by DCE concerning value-adding mentioned above, indicates that the current Victorian consumption of high value-added timber is greater than 300 000 cu.m per year, and only approximately one-third of this is provided by local timbers.

Victoria's current supply of quality hardwoods comes almost entirely from south-east Asian rainforest timbers and Tasmanian and Victorian ash forests. The pressure on future supplies of rainforest timbers from overseas is well documented and the production of timbers from Queensland rainforests has diminished. The Tasmanian ash timber resource has been reduced in recent years through Commonwealth and State Government withdrawal of areas previously available for timber production.

Context of the Central Highlands

The Victorian Association of Forest Industries (VAFI) considers that the ash eucalypt forests (mountain ash, alpine ash and shinning gum) of the Central Highlands are of national significance and provide the most significant resource to the Victorian sawmilling industry and the best opportunity for the industry to respond to competition. Further, these forests are considered to offer most of the advantages usually attributed to plantations - high productivity, a centralised location close to the major market and high quality. Indeed, native forests exceed hardwood plantations in sawn-timber quality.

VAFI also considers that the ash timbers are well placed to capitalise on market opportunities that would lead to significant import replacement and export markets.

The ash eucalypt species provide the only large quantity of quality domestic hardwood in Victoria with a proven performance in high quality 'value added' product lines such as mouldings, linings, furniture, doors, flooring, parquetry, panelling and seasoned structural beams.

The timber is a light golden colour when finished and has a straight regular grain. The wood's response to stains and lacquers means that virtually any desired finish can be achieved without losing the distinctive appeal of the

timber. Its ease of working by hand or machine, good bending properties, strength and stability make it an excellent timber for cabinet work, joinery and many other applications, and it is resistant to wear.

A recent survey revealed that ash eucalypt timbers from Victoria and Tasmania are the most common individual species used by furniture manufacturers in the eastern mainland States and are second only to blackwood in Tasmania. The Timber Industry Council estimates the wholesale value of timber products from the Central Highlands is \$100 million a year. Further processing into doors, furniture and other products would increase this value by several times at the point of consumption.

The diminishing supplies of hardwood timbers from interstate and overseas has opened opportunities for replacement in niche markets by Victorian timbers. J.L. Gould Sawmills in Alexandra, for instance, now supplies tool handles made from ash timbers to a manufacturer who previously used Queensland timbers.

Value-adding of sawn timber

VAFI notes that ash has been the traditional species group in Victoria's 'further processing' activities. While special expertise and care is required in drying the ash eucalypt timbers, particularly regrowth, it has proven less difficult than the denser mixed eucalypts of the mountain and foothill forests; thus the current value adding is centred on ash products. New technologies are being developed, however, and other species are increasingly being processed beyond the unseasoned stage, such as messmate at the Black Forest Sawmill, and yellow stringybark by W.H. Micah and Sons at Erica.

The Victorian Timber Industry Strategy sets directions for the development of an economically and ecologically sustainable timber industry. The value-adding drive is the centre-piece of the Strategy and its success is thus heavily dependent on continued access to the Central Highland ash eucalypt resource which will be Victoria's major future supply of ash timbers.

Value generated by the ash resource

An estimate by Australian Paper Manufacturers Ltd (APM) of the cumulative value of ash timber at various stages from the forests

currently being harvested within the study area to the mill door are:

- * standing tree - royalty \$ 10 465/ha
- * delivered to mills \$ 29 210/ha
- * ex-mill door \$236 200/ha

The ex-mill door products are the raw material inputs for further manufacturing into products such as buildings, joinery, furniture, writing pads, stationary, printed material, cardboard, and containers.

An estimate by Squire *et al.* (1987) values the products at the point of consumption to be more than the equivalent of \$500 000/ha.

On the assumption that a market exists for the products, and using the ex-mill door value of \$236 200 per ha, APM had estimated that the 181 000 ha of ash eucalypt forests in the study area could generate products worth \$43 billion. The company suggests that the mixed eucalypt species forests (of over 2½ times the area of ash) would possibly generate an equivalent value, giving a total of some \$80 billion. APM suggests that these values could be generated over one forest rotation of 80 years. These figures, however, are based on the total area of ash forest on public land - regardless of tenure, productivity or prescription.

The volumes in currently standing trees, ignoring future growth on the 'net productive area' (see later discussion) would have a current value of product ex-mill door of approximately \$4.87 billion.

PULP AND PAPER PRODUCTION

The national situation

Plantations of both hardwood and softwood trees, within Australia, will provide a substantial pulpwood resource during the late 1990s which will be available to the domestic pulp and paper industry. This will provide the basis for the industry to grow to meet increasing domestic demand, import replacement and export.

The volume of export pulpwood supplied from Australia's native forests appears to have reached a peak and may be declining. One of the reasons for this seems to be that alternative sources of eucalypt pulp are coming on stream from extensive plantations in other countries.

Further, Japan, the major importer of Australian pulp is seeking to reduce its dependence on Australia and to diversify its sources of supply. This may be partly in response to the industry statement of 12 March 1991, by the Prime Minister, in which it was announced that an objective of the Commonwealth Government was to phase out exports of woodchips by the year 2000. As a result, Australia is losing its market share.

The RAC enquiry noted that national economic gains would accrue if woodchips could be profitably redirected to pulpmills within Australia, but this cannot be forced by government decree; if it is to occur it must be as a consequence of commercial opportunities and responses. To discontinue exports of woodchips for any other reason, particularly at short notice, would seriously disrupt industry and impose severe economic losses on industry and local communities. Further, a ban on all exports of woodchips would jeopardise the plantation program by eliminating a primary market for thinnings and pulplogs.

More recently, the Draft National Forest Policy Statement (a new focus for Australia's forests - July 1992) noted that:

'The issue of efficient use and value-added processing is particularly relevant to the large volumes of pulpwood that are produced during integrated harvesting options in native and plantation forests. At present the Commonwealth Government approves the export of unprocessed wood and woodchips from integrated harvesting operations and sawmill residues, subject to controls aimed at ensuring that environmental values are protected, that the price obtained is consistent with prevailing world market prices, and that unprocessed wood is not exported if it is commercially feasible to process and add value to it in Australia. The export of woodchips derived from integrated sawlog and pulplog harvesting operations and sawmill residues enables the community to derive a return from felled wood that is unsuitable as sawlogs or is not required by domestic processors.

- * The Commonwealth will lift controls over the export of unprocessed private and public plantation wood, subject to the application of codes of practice to protect environmental values.
- * The Commonwealth will consider longer term approvals for the export of

woodchips from native forests, including managed regrowth forests, where those forests have been subject to an agreed joint State/Commonwealth comprehensive regional assessment of conservation values and where, as appropriate, management plans have been agreed between the State and the Commonwealth, and harvesting is subject to the application of codes of practice. These longer term approvals will be consistent with other Commonwealth Government policies and commitments.

- * In relation to pulpwood production from native forests, the [State] Government will ensure that domestic processors are given the first opportunity to purchase the resource at a price that ensures an adequate return to the forest management agency or the private grower. This policy will come into effect when consideration is given to major changes or renewals to wood resource access.'

Industry's view is that maintenance of the export woodchip trade is crucial for the development of hardwood plantations in Australia. The export market offers an opportunity for plantations to increase output over time, until the scale of operations warrants the establishment in Australia of pulpmills or other manufacturing activities reliant on hardwood supplies.

Pulp and paper supply and demand

Consumption of paper in Australia in 1989/90 was 2 834 000 tonnes, of which imports comprised 958 000 tonnes (34%).

Consumption of pulp in Australia over the same period was 1 230 000 tonnes, of which imports comprised 261 000 tonnes (21%).

Table 6 indicates that Australia was a net importer of pulp and paper to the extent of \$1.126 billion in 1988/89.

Thus, pulp and paper imports are substantial contributors to Australia's adverse balance of payments. Sawn timber imports (see Table 6) are also very significant contributors.

APM has indicated that proposals by the Forests and Forests Products Industry Council (FAFPIC) and by the Pulp and Paper Manufacturers Federation have indicated the substantial improvement that can be made to this situation and the potential for a positive

trade balance, provided that economically competitive mills can be built.

Potential for the pulpwood industry

A study by H A Simons, 'Competitiveness of Australia's Forest Industries', identified opportunities for solid wood products, newsprint and light weight coated papers for the domestic markets, and for bleached eucalypt pulp for export markets.

In its submission to the RAC forests inquiry, APM indicated that 12 major forest regions in Australia are capable of significant development of the forest industry (with other minor regions meeting limited local demands). The analysis for industry development is based on :

- * demand over time for each class of forest product
- * economic size of new processing plants
- * location of available resources.

Locations potentially available for eucalypt kraft pulpmills (the best potential developments identified) are:

- * south coast NSW/East Gippsland
- * central Gippsland
- * northern Tasmania
- * southern Tasmania
- * (south west of) Western Australia

APM considered that all of these would be required over the planning period examined. It believes that the existing infrastructure in central Gippsland gives this site advantages over the others, although additional resources would be required here from plantations and native forests.

APM maintains that the Central Highland area (central Gippsland) is one of the very limited number of sites capable of supplying pulpwood for one of the most viable prospects for development of Australia's forest industries, and for the diminution of the current account deficit.

The significance of the Central Highlands

The Central Highlands of Victoria are the single most important source of eucalypt wood for APM's pulpmill at Maryvale. The company has indicated that the high proportion of ash eucalypts in the wood supply is particularly important for the production of

high quality office, photocopy and printing papers. These papers require opacity, smooth surface for printing and uniform fibre quality so that the sheet remains stable during the photocopy process and does not curl when subjected to heat. If a high quality paper is produced it can be recycled to produce a satisfactory product, although successful recycling requires some input of virgin fibre to maintain quality and strength. Quality must be maintained to match that of imported papers.

In addition, ash eucalypt species are required for the mill to operate within the capacity of its existing recovery furnaces. These furnaces burn the liquor produced from pulping and recycle the cooking chemicals. Mountain ash requires less bleaching to remove lignin and colour, and thus produces less effluent load than mixed eucalypt species wood.

The Maryvale pulp and paper plant has a replacement value in excess of \$1 billion and plans for expansion are under consideration. However, there are important economic considerations involved in the relative levels of domestic paper production and of imported pulp and paper.

The study area supplies 60% of the eucalypt wood input to the Maryvale mill, including 75% of the high quality ash-type pulpwood on which the mill's operation is based. As such, the study area is vital to the economic functioning of the pulpmill and maintains APM's ability to be internationally competitive.

The properties of ash eucalypt pulpwood are good formation, brightness, strength, opacity and resilience. It forms the principal source of kraft pulp that is bleached and made into a range of printing and writing grades. These include, book printing, writing paper, business forms, computer paper, directories, magazines and envelopes.

Ash pulpwood is also used to produce packaging material including corrugated boxes, cartons, bags, sacks and wrapping papers. Pulp properties required for these grades are brightness, strength, stiffness and cleanliness.

Wood Pulp Agreement Acts

Under the *Forests (Wood Pulp Agreement) Acts* of 1962, 1966, 1974 and 1984, APM has rights to eucalypt pulpwood from State forests. These rights continue until 2004 with provision

for extension. Pulpwood is obtained from thinning operations or in the course of sawlog operations from trees or parts of trees not suitable for sawmilling. The agreement currently provides for a 'minimum annual supply' of 500 000 cu.m per annum.

APM notes that the Central Highland ash forests, notably in the Erica, Neerim and Powelltown areas, are particularly important to the Maryvale mill and were the basis for the establishment of the mill and the original Wood Pulp Agreement of 1936. Because of this, the current agreement provides for at least 60% of the wood supply to come from ash forests, at least 70% from a defined 'Forest Area', and also at least 166 000 cu.m from a defined - closer - 'Mill Area'.

Eucalypt pulpwood supply from the study area

Table 7 indicates the volume of eucalypt wood supplied to the Maryvale mill from the study area.

Table 7

EUCALYPT PULPWOOD PROVIDED TO MARYVALE MILL
(1991/1992)

	From study area	From elsewhere	Total supply
	(volume 000 cu.m)		
Ash Species ¹	366 (75 % of ash)	119	485 (70 %)
Mixed Species ²	54	169	223 (30 %)
Total	420 (59 % of total)	288	708 (100 %)

Notes:

- 1. Ash - mountain ash, alpine ash, shining gum
- 2. Mixed - messmate, silvertop, stringybarks, gums

APM considers that the significance of the wood supply from the study area is underscored by the fact that there is no equivalent source of ash pulpwood elsewhere in Victoria.

All the pulpwood that is produced in the Central Gippsland and Dandenong Regions of the Department of Conservation and Natural Resources within the study area is currently

purchased. About three-quarters of the available volume from the Alexandra Region is also purchased by APM with the balance utilised by other companies.

APM has indicated that cartage represents an average of about 35% of wood costs, and believes that cartage distance must be kept to the minimum if Australian produced paper is to be competitive.

APM also considers that the forests of the Melbourne Area, District 2, have significance that extends beyond the regional level to the State and National levels, as they contribute a substantial component of the raw material for the Australian pulp and paper industry and have potential for further contribution.

Much data has been prepared by the Resource Assessment Commission and also submitted to it. APM has undertaken several detailed studies for submission to the RAC and has indicated that there is considerable potential for expansion of the paper industry providing mills are of internationally competitive size. The Central Highlands of Victoria is one of the limited number of areas in Australia where there is a significant consolidated area of forest which can support such a mill.

Expansion of pulp and paper production at Maryvale

The Victorian Government announced in 1990 that it would be entering into discussions with APM regarding a proposal for a major expansion to the Maryvale pulpmill to produce high quality printing and writing paper. The proposed expansion is of smaller scale than would be required for a new site but is viable because existing infrastructure would be used.

Such an expansion, if it proceeded, would require an additional 850 000 cu.m of eucalypt pulpwood. To date, about 17,000 ha of eucalypt plantations have been established in the Latrobe Valley region by APM Forests Pty Ltd and the State Government. Part of the increased demand would be met by an expansion of the company's plantations.

APM maintains that expansion of its plantations is currently limited by State policies concerning the removal of native vegetation and local government planning schemes as well as competing uses for potentially suitable land.

An amendment to the State Section of Rural Planning Schemes has been publicly exhibited.

This aims to reduce or remove planning controls on plantation development on cleared private land in certain circumstances and to apply the Code of Forest Practices to cleared private land.

The Victorian Fibre Processing and Sustainable Development Jobs Council (Jobs and Environment; 1992) suggests that plantations are unlikely to be viable beyond 70 to 100 km of sites where infrastructure and employment are already located. It indicated that new plantations should be located as close as possible to the main centres of Gippsland, North-east Victoria and the South-west Triangle (south-west Victoria and south-east South Australia).

It is understood that the then Department of Conservation and Environment had completed a preliminary analysis of the hardwood pulpwood resource that might be available. The study included examination of wood flows available over 80 years in terms of species, quality and costs of the delivered wood. The existing wood intake of Maryvale and the available resources within all of Melbourne Area, District 2, as well as forests further east, were investigated.

It is clear that, if there is to be a major expansion of the Maryvale mill, any additional pulpwood resource in the Central Highlands will figure prominently because of its proximity to the mill and the fact that it produces high quality pulp, that is, a major portion is ash eucalypt.

As indicated in Table 7, the study area provided 420 000 cu.m of eucalypt pulpwood to the Maryvale mill over the period 1991/92 (59% of the total intake to the mill). This was less than the total volume of pulpwood that was available from the area. It is likely that any additional pulp in the study area would be utilised in an expansion, although other pulpwood users may also be interested in acquiring access to this resource.

APM has indicated that it is unlikely that the proposed expansion will proceed in the near future due to the current economic climate and the fact that, to be internationally competitive, the average cost of infrastructure and services would have to fall.

Therefore, in the absence of a firm proposal seeking additional wood and a lack of detailed information on the availability of pulpwood

from various parts of the State that could contribute to the Maryvale expansion, it is not possible to determine the implications of the Council's proposed recommendations on an increased pulpwood intake.

It can be indicated, however, that approximately 430 000 cu.m of currently available pulpwood resource would be included in the additional parks and reserves proposed in these recommendations; equivalent to about one year's current supply of pulpwood from the study area to the Maryvale mill. Because pulpwood is available from elsewhere in the study area, however, there would probably be no diminution of supply to the mill should that resource become unavailable.

However, pulpwood is produced as a residue from the production of sawlogs in the timber-harvesting operation. It follows that, if logging operations are to continue to be sawlog-driven, the provision of pulpwood to the Maryvale mill is dependent on the continued production of sawlogs. It is possible, therefore, that, should the expansion of the mill proceed, the resource included in the parks and reserves may affect some future sustainable supply of wood to the mill. The nature of that effect cannot be assessed for the reasons outlined above.

TIMBER INDUSTRY STRATEGY

Provisions of the strategy

In recognition of the environmental importance of Victoria's forests and the substantial contribution of forest-based industries to the State's economy, the Government in 1986 released Victoria's first Timber Industry Strategy.

The strategy formed an integral part of the State's Economic and Conservation Strategies. It set new directions for forest management and timber production and ensured an economically viable industry within an environmentally acceptable framework. It provides for:

- * management to safeguard all forest values and uses including water quality, landscape, wildlife habitat, recreation and timber production
- * long term planning to ensure that forests which are logged will be regenerated and tended, so that they continue to provide sustainable yields of forest produce

- * value-adding forestry and timber processing; new systems designed to make the most of every log taken from the forest
- * new technology to make the Victorian timber industry more competitive on national and international markets
- * support for communities where changes in the timber industry are likely to cause social and economic difficulties
- * public participation in the planning process.

Several other initiatives linked with the Strategy contribute to the protection of environmental values within State forest and lay down operational standards for timber production :

- * a legislated Code of Forest Practices for Timber Production which lays down minimum operational standards for timber production
- * conditions on timber licences requiring compliance with the Code of Forest Practices for Timber Production and the *Occupational Health and Safety Act 1985*
- * *Flora and Fauna Guarantee Act 1988*
- * a commitment to ban timber harvesting in rainforest as specified in the Code of Forest Practices for Timber Production
- * the preparation of comprehensive Forest Management Plans, which take into account all uses and values and provide for regional site-specific prescriptions.

The Strategy also provides for a sawlog-driven, high value-added industry which achieves the best use of wood withdrawn from the forests and provides long term employment.

In accordance with the Strategy, all publicly owned native forests in Victoria are now managed on the basis of sustainable sawlog yields calculated for each of the 15 Forest Management Areas across the State. These sawlog volumes have been incorporated in legislation through the *Forests (Timber Harvesting) Act 1990*. Long term (15 year) licences for sawlog harvesting in State forest are based on these calculated sustainable yield volumes.

Integrated wood harvesting

Integrated wood harvesting is the production of sawlogs and pulpwood in the one operation and has been carried out in the Central Highlands for more than 40 years.

Harvesting is carried out by independent contractors; regeneration is done by the DCNR. Trees are felled and snigged to landings where the whole tree is assessed and then cut into different grades of sawlog and pulp as required by the Government's Value Added Utilisation System. Sawlogs are transported to particular sawmills, matching log quality with the individual sawmill's technology. Pulpwood is transported to APM's Maryvale mill or, in some cases, other users. Operations in the study area are integrated across 20 sawmills located widely from Alexandra to Heyfield.

Co-operative, integrated logging arrangements operate in the Central Gippsland and Alexandra Regions to oversee each contractor's operation and the movement of logs to licensees. In addition, DCE monitors adherence to the Code of Forest Practices, and Training and Safety officers from APM Forests ensure that equipment, procedures, and training at the workplace meet the appropriate occupational health and safety standards.

The contractors are independent small businesses and their labour force is widely dispersed throughout rural communities.

The Council is aware that concerns have been raised about clearfelling as a silvicultural technique and the removal of pulpwood (residual roundwood) from logging coupes. Both issues were addressed in the Timber Industry Strategy in 1986. Since that time the Victorian Government has initiated two research projects: one dealing with the question as to whether a better balance between environmental and economic considerations can be achieved with silvicultural systems other than clearfelling; the second project is addressing the environmental and socio-economic consequences of sawlog only harvesting and regeneration, and also the incremental effects of residual roundwood removal. Interim reports from these projects - the Silvicultural Systems Project and Value Adding Utilisation System Trial - have been prepared and include some preliminary findings.

The Council considers that any future plans for the utilisation of pulpwood should be confined

to the areas identified as being suitable and available and be tied strictly to the procurement of sawlogs, unless the material is obtained as a result of silvicultural thinning programs which are aimed at providing a greater volume of sawlogs at the final felling at the end of the rotation. Rotation lengths should continue to be geared to the production of high-quality sawlogs with the production of pulpwood as a by-product. This would preclude the use of pulpwood cycles which, particularly in forests close to the mill, could be economically more feasible.

The Timber Industry Strategy noted that opportunities exist to significantly increase the productivity and log quality of certain forests through the application of thinning regimes. The Department, through the 'Young Eucalypt Program' and, more recently, in collaboration with the CSIRO Divisions of Forest Research and Chemical and Wood Technology, is conducting operational trials to investigate the potential of thinning to improve sawlog production and also to identify ways in which the thinnings can be utilised for various products. Thinning has been undertaken in the Central Highlands on an operational basis in the past and, depending upon the outcome of those trials, thinning of regrowth forests in suitable areas could be a feasible option for State forest in the future.

It should be noted that substantial volumes of pulpwood would be available over the next 30 years or so. These likely wood flows (including those that may be available from thinning operations in regrowth stands) need to be taken into account when consideration is given to the way a pulpwood resource may be utilised.

Planning of timber harvesting

A system of integrated management planning was developed under the Timber Industry Strategy. State-wide principles and guidelines for timber-production operations were established in the Code of Forest Practices for Timber Production.

Forest management plans are being prepared for each of the 15 Forest Management Areas (FMAs) created across the State. These will contain more detailed principles and prescriptions applicable to the respective FMAs, with harvesting prescriptions to suit local forest types, land and soil types, and climate. Public consultation will be part of the preparation process; each plan is valid for 10

years. Wood utilisation plans will detail wood production (in terms of the type, quality, and allocation to processors). At the most detailed level, forest coupe plans contain detailed prescriptions applicable to individual harvesting coupes.

Council's Melbourne Area, District 2 is covered by the Dandenong, Central, and Central Gippsland Forest Management Area plans. The draft plan for the Dandenong FMA will be released for public comment in the near future; drafts of the other two FMA plans are in preparation.

Through the development of prescriptions and other detailed management proposals, the plans will provide for the protection and management of all forest values.

Restrictions placed on access to planned logging coupes, as may arise from the application of particular strategies [such as the draft management strategies for Leadbeater's possum] or through changes in land use, will require rescheduling of harvesting areas. This, in turn, will create short-term difficulties in supplying logs to sawmills in accordance with licence conditions and for management of the remaining resource until new infrastructure (roads etc) are established.

NATIONAL FOREST POLICY STATEMENT

The Commonwealth and State and Territory Governments, with the exception of Tasmania, have agreed upon a national approach to the sustainable management and use of Australia's forests. The National Forest Policy Statement, released in late 1992, sets out the vision for Australia's forests and forest industries into the next century, based on the principles of ecologically sustainable development.

The key objectives of the Statement as they relate to the Council's proposed recommendations are:

- * a determination of agreed criteria for comprehensive, adequate and representative reservation systems
- * establishment of a network of dedicated and secure reserves based on these principles, supported by complementary management outside reserves, conditional on satisfactory agreement on criteria
- * a comprehensive, adequate and representative reserve system of old-growth

forests and wilderness areas in place by the end of 1995 for public lands

- * further developing and applying codes of practice for all commercial and high impact uses
- * avoiding or limiting clearing of public native forests to cases where regional conservation objectives and catchment management objectives are not compromised
- * provide certainty and security to industry of access to resources following protection of conservation values, so that industry can make significant long-term investments in value-adding projects
- * further developing pricing and allocation systems which are market-based and allow transferability of rights, a fair return to the community, and promotion of the most efficient use of resources
- * revised accounting procedures to reflect costs associated with wood production and community services
- * implementation of land use decision-making processes agreed in the context of the Intergovernmental Agreement on The Environment.

The Council notes that its recommendations are consistent with the National Forest Policy Statement which is endorsed by the Victorian Government and that Victoria has achieved many of objectives of the Statement through the Land Conservation Council process over the last 20 years.

THE TIMBER INDUSTRY BASED ON THE CENTRAL HIGHLANDS

History

Eucalypt forests cover most of the public land in the study area. Utilised for timber production since the earliest days of European settlement, they continue to provide timber and timber products.

The more accessible forests near Melbourne provided building materials and firewood for the growing city in the 19th Century. Gold discoveries in the 1850s vastly increased the timber demand but, because most gold-mining activity occurred elsewhere, forests in the study area remained relatively unaffected.

Notable exceptions are those at Walhalla, Healesville, Toolangi and Warburton, where large areas of forest were clearfelled and used for fuel, building materials, and mining timbers.

Timber provided split palings and shingles from the earliest days of settlement, but sawn-timber uses were restricted by seasoning problems. By 1910 seasoning techniques had been developed and sawmills, associated settlements, and tramways for transporting sawlogs were established, firstly in the Yarra valley near Warburton, and soon after in the La Trobe and Thomson valleys. Those tramways remaining after the 1939 fires fell into disrepair from the 1940s and some of them have become popular walking tracks. Settlements and tramways were also established at Mount Disappointment, Yea and Goulburn.

Inadequate and unsafe water supplies in early Melbourne necessitated official action in securing a water supply for the city. Those water supply catchments near Melbourne first selected were also used for agricultural production, and the quality of this untreated water soon fell. Restricted access and land-use policies were subsequently applied to a number of catchments specifically designated for water supply and vested in, or leased to, the predecessor of Melbourne Water Corporation.

Prior to the development and application of regeneration techniques suitable for eucalypts, logging was selective and trees and logs considered to be low quality for sawn timber were usually left. Investigations subsequently proved that low-quality eucalypt logs were suitable for paper-making, and in 1936 Australian Paper Manufacturers Ltd entered into an agreement with the government to obtain pulpwood from both foothill and mountain forests within a region that includes much of the study area. This agreement was ratified by Act of Parliament and has been revised several times, most recently in 1984. Harvesting pulpwood in conjunction with sawlog-harvesting operations has therefore been a feature of the forests of the study area for more than 50 years.

The fire history of the mountain forests here had a critical influence on the development of the hardwood sawmilling industry in Victoria. In 1926, large tracts in the Acheron Valley and south of the Yarra, extending to Toorongo, Toolangi and Noojee, and at Mount Disappointment, were burned by wildfire. The forests were severely burnt in the fires of Black

Friday 1939. Between them, the 1926 and 1939 fires killed and caused the regeneration of most of the mountain forest in the study area. More recently, in 1983, 17 600 ha of mountain forest in the Upper Yarra valley were burned. Also burnt were forests at Mount Disappointment and in parts of the Black Range.

World War II resulted in increased demand for timber, which accelerated in the post-war boom in housing construction. Salvage of sawlogs from 1939-fire-killed trees largely provided Victoria's requirements for sawn hardwood timber until the early 1950s, when the older trees had deteriorated and the harvesting operations would have caused unacceptable damage to the developing regrowth. As a result, the timber industry in the study area was scaled down. Access to timber resources in the east and north-east of the State led to the development of sawmills in those areas.

The extensive eucalypt forests within the study area are characterised by relatively small tracts of old-aged mountain forests, and extensive regrowth stands that date from 1939. Significant but considerably smaller areas date from 1926 and 1983 and very small areas of mountain forest are of other ages.

As the timber industry in other parts of the State (for example, East Gippsland) reduces the volume of timber it harvests annually so that

sustainable yields can be achieved, the forests within the study area will become increasingly important for timber production in the next 20 years, the period when the 1939 regrowth ash forests approach an optimal (economic) age for harvesting. The Timber Industry Strategy considered that the ash regrowth resource 'will form the backbone of the hardwood sawmilling industry in the future'.

The government in July 1992 noted that, with the creation of national parks in the Victorian Alps and East Gippsland, the ash regrowth forests of the Central Highlands were cited as the alternative timber resource.

HARDWOOD TIMBER RESOURCES

Assessing timber resources available from the total forest necessitates the identification of those areas both suitable for commercial harvesting and available for such activities.

Table 8 provides a summary of the forest resources, by area, for each of the major current land-use categories. Of the total net productive area of the study area (347 400 ha), 75% is in State forest, 15% in parks and reserves, and 10% in the protected catchments of Melbourne Water. Within the total area of 476 300 ha of State forest in the study area, 30% is not suitable for sawlog production and a further 15.5% is excluded by prescription,

Table 8
FOREST AREAS BY MAJOR LAND-USE CATEGORIES

Category	Definition	Area within each land-use category (ha)			
		Entire study area	State forest	Parks and reserves	Melbourne Water catchments
Total forest area	Total area covered by forest (i.e. predominantly single-stemmed vegetation in excess of 5 m high, with tree crown coverage over 30% of the land area)	670 935	476 292	122 529	72 114
Gross productive area	Forests capable of producing merchantable timber (i.e. unsuitable forest types and those under 28 m high excluded)	450 681	334 017	49 958	66 706
Net productive area	Forests available and suitable for timber production (i.e. excludes land unavailable under the Code of Forest Practices)	347 428	259 623	52 386	35 419

Source: DCNR HARIS database, 11 March, 1993.

leaving 54.5% (or a net area of 259 600 ha) both available and suitable for timber production. The table also indicates complementary analyses for the existing parks and reserves and the Melbourne Water catchments.

The timber resource figures in this section were provided by the Department of Conservation and Natural Resources and are based on estimates contained in the Hardwood Area and Resources Information System (HARIS) records of 30 July 1992. Records of resource estimates are dynamic and are continually reviewed as areas are harvested and stands of trees are assessed in detail - providing new information about stand condition and development, timber volumes, and other land values. Resource data for the Dandenong FMA, for instance, has recently undergone a fundamental review. That data will be included in the draft FMA plan that the Region will release for public comment in the

near future. The data it contains will be available to the Council when it prepares its final recommendations.

Sawlog-driven timber-harvesting requires forests of sufficient productivity and, as a result, not all forest areas are suitable. Several factors may cause a forest to be considered as 'unproductive' for sawlog-driven operations. An area may not carry an adequate volume of timber or may support unsuitable tree species or be of low site quality.

Gross Productive Area is the total area of forest capable of producing timber resources and excludes land of low inherent productivity on account of soil, topographic and climatic characteristics. Within the study area, this amounts to some 450 700 ha, comprising 67% of the total area of forest. Table 9 gives Gross Productive Area for each forest type and age class. It refers to all public land in the study area regardless of tenure.

Table 9

GROSS PRODUCTIVE AREA OF ALL HARDWOOD FOREST
(by forest type and age class)

Forest type	Area (ha)			
	Mature/overmature	Pre-1940 regrowth	Post-1940 regrowth	Total
Mountain ash	26 497	85 545	13 430	125 472
Alpine ash	2 512	32 724	4 684	39 920
Shining gum	1 051	3 978	108	5 137
Mountain mixed-species	27 617	7 620	2 651	37 888
Foothill mixed-species	164 392	31 927	41 253	237 572
Other species	4 692			4 692
Total	226 761	161 794	62 126	450 681

Note: Numbers in this table are for all public land in the study area.

Source: DCNR HARIS Database, 11 March, 1993

Government approved land-uses determine the forest areas available for timber-harvesting. Commercial harvesting is permitted within areas designated as State forest. In its 1977 Final Recommendations for the Melbourne Study Area, and subsequently approved by the government, the Land Conservation Council made a substantial area of forest available for commercial harvesting.

Timber is also harvested from some State forest that Council's earlier recommendations classified as 'uncommitted'. Under the Council's land-use recommendations and subsequent land management prescriptions, commercial

timber-harvesting is not permitted in:

- * reference areas
- * wilderness
- * national, State, and regional parks
- * flora reserves
- * wildlife reserves
- * education areas

Commercial harvesting is not undertaken in the closed water supply catchments that are wholly under the control of Melbourne Water Corporation.

For the forests available for timber production, the Code of Forest Practices has established

guidelines to protect a range of values and which may involve the exclusion of harvesting from some areas. In general, logging is excluded from steep slopes (generally greater than 30°), streamside reserves, rainforest buffers, wildlife corridors, and sites of floral, faunal, historical and archaeological significance. Prescriptions protecting landscape and recreational values are also applied. Once all exclusion zones are removed, the remaining forest, that is both suitable and available for commercial timber production, is

termed the **Net Productive Area**.

Net Productive Area within Melbourne Area, District 2, Review currently totals almost 260 000 ha. This is almost 78% of the gross productive area of State forest or over 38% of the total forest in the study area. Table 10 shows it by forest type and age class. Table 8 also indicates the equivalent areas in the Melbourne Water catchments and existing parks and reserves.

Table 10
NET PRODUCTIVE AREA OF STATE FOREST
(by forest type and age class)

Forest type	Area (ha)			
	Mature/overmature	Pre-1940 regrowth	Post-1940 regrowth	Total
Mountain ash	6 254	46 793	11 757	64 804
Alpine ash	1 479	20 362	4 530	26 371
Shining gum	527	3 372	105	4 004
Mountain mixed-species	15 906	6 188	2 269	24 363
Foothill mixed-species	87 625	20 262	30 203	138 090
Other species	1 991			1 991
Total	113 782	96 977	48 864	259 623

Source: DCE HARIS Database, 11 March, 1993.

Available timber resource

The 259 623 ha of forest currently assessed to be both suitable and available for harvesting contains an estimated 13 582 900 cu.m of sawlogs of grade C or better. Sawlogs are produced from trees that are relatively free from defect (such as hollows, limbs, brown rot, and insect attack) for conversion into sawn-timber products; the various sawlog grades are defined in terms of the presence and number of these defects.

In addition, the forest can provide residual roundwood from the merchantable portions of trees harvested in conjunction with sawlog operations. This material provides additional sawn timber and products such as paper-pulp and hardboard, as well as poles and posts, garden chips, and reconstituted wood products.

Timber yield varies significantly according to forest type. Mountain ash, alpine ash and shining gum forests, although currently comprising only 37% of the total Net Productive Area, contain more than 83% of C

Class or better sawlog volumes, as shown in Table 11. By comparison, foothill mixed-species forests account for more than 53% of the current Net Productive Area in State forest, but yield less than 12% of the total C or better grade sawlog timber volumes currently available. These ratios clearly indicate the importance of the highly productive ash and shining gum forests to the hardwood resources of the study area.

Sustainable yield

Sustainable production of forest goods and services is one of the goals of timber production from the public land native forests. Sustainable yield is the level of output that can be maintained in perpetuity without impairment of the land's productivity.

The volume of sawlogs from mature forests is calculated for minimum rotations of 80 to 150 years, depending on forest type.

For each Forest Management Area (FMA) the sustainable yield for annual sawlog-harvesting

Table 11
RESOURCE WITHIN NET PRODUCTIVE AREA
(by forest type)

Forest type	Volume of Class A, B, and C sawlogs			Residual roundwood (cu.m)
	Volume of sawlogs (cu.m)	% of total volume	% of net productive area	
Mountain ash	8 165 800	60.1	25.0	12 236 000
Alpine ash	2 690 800	19.8	10.2	3 588 400
Shining gum	460 900	3.4	1.5	1 539 600
Mountain mixed-species	649 000	4.8	9.4	1 334 800
Foothill mixed-species	1 613 800	11.9	53.2	4 175 400
Other	2 600	<0.1	0.8	5 200
Total	13 582 900			22 879 400

Source: DCNR HARIS Database, 11 March 1993.

from the net available area (under current prescriptions and strategies) has been calculated, and subsequently guaranteed by the *Forests (Timber Harvesting) Act 1990*. However, Parliament may alter the sustainable yields where circumstances alter the available timber resource.

As the FMA boundaries do not correspond exactly with the boundary of Council's Melbourne Area, District 2, it is not possible to determine the sustainable yield specifically for the study area. Table 12, however, gives estimates of sustainable yield for each of the FMAs that overlap it. Those up to 2001 were calculated for the Timber Industry Strategy (Victoria 1986). For the later period, the estimates are based on existing public land use and resource data.

As indicated in the table, sustainable yields are expected to increase after the year 2001 as the timber volume available is supplemented by regrowth. However, the calculated sustainable yield might decrease if wildfire or disease affected substantial forest areas or if changes in existing public land use or land management policies or prescriptions caused downward revisions of current resource availability estimates through a reduction in the net area available for timber production. Detailed reassessment of the extent and condition of the wood resources, however, may increase or decrease the calculated available volume.

Table 12
SUSTAINABLE YIELDS FOR FOREST MANAGEMENT AREAS

Forest management area	Sustainable yield (cu.m of Class C+ sawlogs per annum)	
	Timber Supply Period	
	1987-2001 (see Note 1)	2002-2016 (see Note 2)
Central Gippsland	183 000	208 000
Dandenong	41 000	65 000
Central	115 000	152 000

Notes:

1. The sustainable yield indicated for 1987 to 2001 is that set down in the *Forests (Timber Harvesting) Act 1990*.
2. The anticipated sustainable yield figures in this column were supplied to the Council by the Department of Conservation and Natural Resources in November 1992. They reflect re-appraisal of the available resources prior to the Council's proposed recommendations.

Licences for timber harvesting

A feature of the Timber Industry Strategy concerns the provision of sawlogs from public land to privately owned processors. In

particular, it also addresses the issues of value-adding processing, security of supply, and financial arrangements.

Licences for sawlog supply, negotiated between the former DCE and sawmill operators, have maximum annual totals in line with FMA sustainable yields. The only exceptions are those FMAs, such as East Gippsland, where a phase-down to sustainable yield levels is taking place. For each 15-year licence, the volume and grade of timber that the department makes available to the licensee are specified. However, the annual volume cut need not equal the total licensed volume, as the arrangement allows for some flexibility. Licensees can vary the timber volume required and the amount specified in the licence by up to 30% in any one year (but no more than 10% over 5 years).

The Government, in early 1992, announced it would honour its obligation to the timber industry in the Central Highlands to provide for a sustainable growth in supply of quality hardwood for the forest products industry, with particular emphasis on value-adding. It also agreed to the early renewal of some 15-year licence contracts where there are firm schedules for "value-adding" utilisation related investment.

Associated with the log licence system, instituted in 1987, is the Value Adding Utilisation System (VAUS), a feature of the Timber Industry Strategy. This Scheme requires sawlogs to be graded and allocated to processors so as to ensure the highest-value end use. Under the licence system, those mills best suited to producing higher-quality products are allocated higher-quality logs.

About 43% of the raw net volume of hardwood logs supplied to sawmills is converted (recovered) during the sawmilling operation into sawn timber. Of the order of 33% comprises waste that can be converted into chips. The remainder of the log volume is lost as sawdust, through the production of over-dimension timber to allow for shrinkage on drying and planing for value-adding, and material that will not readily pass through the chippers.

About 44 000 cu.m of woodchips are sold annually by the sawmills to the APM pulpmill at Maryvale. Further sales are made to Midway at Geelong for export and to the Australian Forest Industries pulpmill at Myrtleford. The remaining residues are sold

as firewood, for garden use, or, because not all mills have chipping facilities, burnt.

Royalty equation system

The money paid by sawmillers to the government for sawlogs and pulpwood provided from State forest in Victoria is known as **Royalty**.

The inherent value of a log to the timber industry depends on the amount and quality of products which can be cut from it along with the cost of getting those products to market. The Royalty Equation System was first introduced in 1950 to reflect these criteria so that sawn timber could be put onto the market at roughly the same price by any sawmiller in the State.

Adjustments to the royalty are made for:

- * the cost of transporting the sawlog from the forest to the mill
- * the cost of transporting the sawn timber to the key market (Melbourne)
- * a factor for quality based on the maximum amount and quality of sawn timber which can be cut from the sawlog (recovery rate), and
- * a levy placed on royalty payments to provide for the costs of roading.

Royalty rates for pulpwood are set at a standard rate.

The Royal Equation System is currently being reviewed.

Resource use

A substantial sawmilling industry and a pulp and paper industry draw upon the hardwood resources of the study area.

Government hardwood log allocations from the study area approximate 312 840 cu.m and are supplied to 45 sawmills. In 1991, half of the harvested sawlogs were allocated to five companies, while 20 companies had allocations of less than 3000 cu.m. Some of them are located outside the study area, but draw primarily on its resource.

Analysis of the market destination for timber from the study area revealed that 62% was for unseasoned structural products, 10% for seasoned structural, 25% for seasoned

appearance grade, 2% for unseasoned appearance, and less than 1% for veneer uses.

As noted earlier, the Central Highlands are the single most important source of eucalypt pulp for the APM mill at Maryvale. In 1991/92, some 420 000 cu.m or 60% of its intake of eucalypt pulpwood was harvested from logging coupes in the study area. Sawmill residues are an additional source.

Employment

The 45 hardwood sawmills and the one pulp and paper mill that draw on the public hardwood resource of the study area employ staff directly in the primary processing of the resource, and a wide range of contractors such as fallers, drivers, plant operators and supervisors. The Department of Conservation and Natural Resources (DCNR) employs staff to supervise these operations and carry out road maintenance and reforestation of harvested areas.

Primary processing

In mid-1989, the Timber Industry Council (TIC) conducted a survey of hardwood mills to establish employment in primary processing of the hardwood resources drawn from the study

area. It recorded some 640 employees. Using an estimation system that equates mill employment with sawlog input (20 employees per 10 000 cu.m input), the TIC estimated that the sustainable yield for the three FMAs concerned would generate employment for 682 persons.

Future changes in mill productivity will influence employment. Productivity increases are expected to be 2 to 3% per annum and would be associated with employment reductions of 20 or more persons per annum in the short term. On the other hand, the TIC report noted the intentions of many mills to undertake considerable investments and structural change, which would generate some additional employment. A feature of the Value-adding Utilisation System (VAUS) is to encourage further value-added processing which, in turn, increases the technical expertise and job satisfaction of employees.

In 1992, the Maryvale pulp and paper mill directly employed 1070 people, of whom, on a pro-rata basis, some 420 employees could be attributed to the eucalypt wood resources drawn from the study area.

Table 13 shows employment and timber allocations on a local-government basis.

Table 13
SAWMILLS, ALLOCATIONS, AND EMPLOYMENT
(by local government area)

Local government	Number of mills	Annual timber allocation from public forests within study area	Number of full-time mill employees attributable to that resource
Broadford	1	9 100	11
Yea	2	33 000	24
Alexandria	2	41 400	101
Romsey	1	500	6
Creswick	1	400	2
Melbourne metropolitan area	1	500	
Whittlesea	3	4 900	10
Healesville	6	28 300	31
Upper Yarra	10	46 130	73
Lillydale	1	1 800	5
Buln Buln	8	44 130	122
Warragul	2	17 300	9
Narracan	3	7 575	28
Maffra	3	75 700	208
Woorayl	1	2 130	N/A

Source: Timber Industry Council and DCE (1991)

Forest workers

Timber mills employ a wide range of contractors for forest operations and log cartage. In the past, there have been difficulties in obtaining reliable data about the work force because of the seasonal and widespread nature of the industry. However, recent legislation requires forest workers to be accredited and licensed.

Up to November 1991, 748 people had been accredited as forest workers in the Dandenong, Alexandra, Melbourne, and Central Gippsland Regions of the Department of Conservation and Natural Resources. Not all of them are employed full time. The majority of these people are likely to work in the public forests of the study area. Accreditation is not required for some forest workers operating solely on private land. APM has had an accreditation system in place from the mid-1970s and all forest workers operating on APM land are accredited. In addition, a considerable number of people are involved in forest-based employment like tourism and recreation as well as in secondary industries supporting the timber industry.

Department of Conservation and Natural Resources staff

Three DCNR regions cover the study area, with offices located at Dandenong (Dandenong Region), Alexandra (Alexandra Region), and Traralgon (Central Gippsland Region). Head Office staff are also involved in tasks relating to these regions.

The Department estimated that the equivalent of 75 regional staff were engaged in logging supervision, road construction, maintenance, and reforestation within the study area.

Total employment

The Council has received a report entitled - A Social and Economic Impact Assessment in the Central Highlands (Melbourne Area District 2), Victoria - by the consultants Henshall

Hansen Associates and Read Sturgess and Associates. In that report, the consultants indicate that the timber industry in the study area usually supports about 1840 direct jobs; most of which are held by people resident in the study area. These employees are engaged in primary processing, the APM mill, accredited forest workers and government staff; some of them are part-time.

The consultants suggest a multiplier of about 2.3 to provide an indication of the number of additional indirect jobs supported by the timber industry. These additional (2,390) jobs would be in retailing, manufacturing, and services.

Timber towns

As a consequence of the historical development of the timber industry, the study area contains several 'timber towns'. Such towns are based on direct and indirect employment in one or more local sawmills. Dependence on mills for employment is usually more acute in the smaller towns.

Examination of Australian Bureau of Statistics' employment data (1986 Census) for selected towns with a population of more than 1000, reveals a generally low number and percentage of the labour force involved in the timber industry. In Alexandra, Broadford, Drouin, Healesville, Millgrove, Trafalgar, Warragul, Woori Yallock and Yarra Junction, the labour force for 'Forestry and Logging' was usually less than 1%, and only one centre's labour force exceeded 4% in the category 'Wood products and Furniture' (ABS 1986).

The Bureau does not release data on the labour force in towns with populations under 1000 persons. A Timber Industry Council survey of Marysville and Erica, (both with populations under 1000) indicated that 19% of the work force were engaged in the timber industry. Similar situations may also exist for other small towns: Crossover, Darnum, Fumina, Narbethong, Noojee, Powelltown, Rokeby, and Toolangi.

STATE FOREST

Definition of State forest

In its earlier recommendations, the Council designated the larger areas of forested public land in the State that were not incorporated into parks, or set aside in various reserves or for softwood production, as either areas for

hardwood timber production or as uncommitted land. In its final recommendations following the Alpine Area Special Investigation, published in November 1983, the Council proposed that such forested land be managed as a single unit.

The Council decided to refer to this land as 'State forest'. It believes the term best describes public land in both timber production areas and uncommitted land, even though in a State-wide context it may contain a range of vegetation types - from tall mountain forests through to woodlands, mallee scrub, heathlands and swamplands. The name is used for descriptive purposes only as distinct from the term defined in the *Forests Act 1958*.

State forest comprises a mosaic of forests of varying productivity, and the separation of land into timber production areas and uncommitted land has tended to reinforce the belief that the State's commercially productive hardwood forest is entirely located within hardwood production areas and that timber production is the sole object of management there. In fact, a significant volume of commercial timber is extracted, in conformity with Council's recommendations, from uncommitted land; at the same time, hardwood production areas are managed for a range of uses, as well as for wood production and contain many areas that are not timber-productive.

Although many of the outstanding natural features and values occurring on public land are included in parks and reserves, the hardwood production areas and uncommitted land contain significant water production, landscape, historical and conservation values. Many rare plants are found in the forests and, considering they occupy about two-thirds of all public land, they are of major significance as faunal habitat. The term 'hardwood production' implies quite erroneously that such areas have few values other than for timber production, while the term 'uncommitted land' belies the significance of this land for many different uses - including timber production.

The Council has defined the area of State forest within the study area and, in line with the concept of unified (and) co-ordinated management, believes it would be appropriate for all State forest to be administered under one Act and be securely reserved under a single land tenure incorporating provisions similar to those currently applying to land administered under the *Forest Act 1958*.

Softwood plantations also form part of Victoria's forest estate and contribute to sawlog and pulpwood resources. The contribution of softwoods to the timber and paper pulp industries has been discussed earlier in this chapter. A discussion of the extent of

the plantations in the study area is provided in Chapter K - Forest Plantations.

Land use goals

State forest throughout Melbourne Area, District 2, has a multiplicity of uses. It is important for the protection of water supply catchments, conservation of plants and animals, and timber production and provides many opportunities for outdoor recreation. The forests also provide honey, forage, road-making materials, other forest products and minerals to satisfy various community needs.

Management of State forest should take into account the various intrinsic values and ensure that they are maintained and that the use of the range of forest products is ecologically sustainable.

The Code of Forest Practices for Timber production, initiated under the Timber Industry Strategy, seeks to ensure that timber growing and harvesting operations to promote an internationally competitive forest industry are conducted on public land (and those areas of private land where commercial timber production operations are conducted) in a manner that is compatible with the conservation of the wide range of environmental values associated with those forests.

The Code provides minimum standards for all timber production operations in the State. It lays down State-wide principles and guidelines that apply to timber harvesting, timber extraction, roading, regeneration, and reforestation in nature forests; as well as to the establishment and tending of softwood and hardwood plantations to ensure that:

- (a) land managed for forestry is adequately regenerated and tended following timber harvesting
- (b) reforestation is achieved efficiently and with environmental care
- (c) environmental values including landscape, flora, fauna, archaeological, historical, and other cultural sites are conserved, and water catchments are protected.
- (d) opportunities are provided for recreation, scientific study, and education
- (e) the principles and guidelines in the Code are also aimed at meeting the objectives of the State Environment Protection Policy for the Waters of Victoria.

The Code provides minimum standards of environmental care which must be followed in compiling regional prescriptions and setting conditions for the control of particular timber production operations. The Council endorses the Code of Forest Practices and notes that many of its principles reflect those which the Council itself has advocated for the management of State forest.

It would have been impractical for the Code itself to provide detailed prescriptions that could be applied to every forest situation encountered throughout the State. Variability in climate, forest type, topography, elevation, soil type, land ownership, and emphasis on various management objectives, requires that practical, detailed operational prescriptions must be developed regionally and must be used in specifying conditions for each timber production site.

Forest Management Plans and other plans will be compiled to be consistent with the Code.

Regional prescriptions will be set out in the Forest Management Plan approved for each of the 15 Forest Management Areas in Victoria and operational conditions for each timber harvesting site will be set out in a Forest Coupe Plan. The principles and guidelines set out in the Code will be expressed as prescriptions in these plans.

More detailed goals for environmental care with regard to planning and conducting of timber growing and harvesting operations have also been set down in the Code. These seek to ensure that:

- (a) water quality is protected by measures which prevent the direct disturbance of streams, springs, swampy ground and bodies of standing water, and their physical, chemical, or biological quality
- (b) streamflow is maintained by the careful planning of operations
- (c) soil stability is protected by measures which regulate site disturbance
- (d) soil, water catchment, and landscape values are protected by the careful location, construction, and maintenance of timber extraction roads, and regulation of their use
- (e) fauna, flora, and landscape are protected by the careful planning of operations and

the reservation of appropriate patches and corridors of vegetation

- (f) the floral and faunal diversity of native forests including a range of successional stages is maintained on public land
- (g) forests are protected from the introduction of and spread of pest plants and animals, plant diseases, and insect pests
- (h) intensive recreation sites and areas of high scenic quality are protected from adverse effects of operations on adjoining public land
- (i) significant biological, archaeological, and historical sites are preserved
- (j) forest values are protected by the removal of rubbish from sites following timber production operations

In relation to these goals, a number of principles are referred to below. These are based on harvesting prescriptions used by the Department of Conservation and Natural Resources. In addition, a schedule of values within State forest is provided. These should be protected by the implementation of management prescriptions.

Soil conservation and catchment protection

Buffer strips to streams should be adequate and not logged and, where possible, other operations that cause soil disturbance should not take place in the buffer strips. They should, as far as practicable, be protected from fire. The width of the buffer should be determined after consideration of the sensitivity of the particular stream environment.

The Code of Forest Practices specifies that 'water quality must be protected by:

- * the retention of riparian and other vegetation within at least 20 m of a permanent stream (streamside reserve)
- * the retention of riparian and other vegetation within 20 m or other greater approved distance from permanent springs, swampy ground and bodies of standing water
- * the retention of a filter strip at least 5 m wide on either side of temporary streams and drainage lines.

Wherever appropriate, increased reserves beyond the minimum standards specified above must be applied to protect environmental factors; these may apply to permanent and temporary streams, drainage lines, and other wet areas referred to above.'

Timber-harvesting in water supply catchments should be undertaken in accordance with the Code of Forest Practices and/or prescriptions agreed to by the Department of Water Resources or the delegated water authority. Management of the catchments providing water used by the Rubicon hydro-electric scheme should ensure protection of water quality.

All roads, snig tracks, log landings, and log dumps should be located, designed, constructed, and maintained to minimise erosion and deterioration of water quality. These should be adequately drained, and breached, barred and rehabilitated to encourage rapid regeneration when no longer required.

Intensive utilisation operations should be excluded from areas of high erosion hazard and from slopes generally greater than 30°.

Except in some mixed-species forests at lower elevations, restriction should be placed on logging operations during winter and during and following periods of heavy rainfall; consideration should also be given to closing unsurfaced logging roads during these periods. Seasonal closure of other roads will continue to be necessary because of excessive damage, erosion, cost of maintenance, or because of extreme fire hazard.

Under the forest planning system outlined in the Timber Industry Strategy, forest roading and harvesting operations will be subject to plans prepared by the Department of Conservation and Natural Resources. Public comment will be invited prior to their implementation to ensure the aims outlined in the above principles can be achieved.

Recreation and landscape

In planning for recreation and protection of landscape, special consideration should be given to road location, size and shape of logging coupes, and other activities carried out in the forest in areas of high landscape value.

Specific prescriptions should be applied to logging and other activities involving disturbance to the natural environment near major roads and popular walking tracks. A section of

the Alpine Walking Track passes through State forest - across the catchment to Lake Thomson. This is discussed in Chapter J - Community Use Areas (see Recommendation J16).

Activities involving disturbance to the natural environment should not occur in buffer zones around popular recreation sites and beauty spots.

The Central Highlands Sanctuary (of some 223 000-ha) was originally set aside to protect "game" (including deer) and "native game", such as native ducks to ensure that the game had the opportunity to develop and maintain viable populations. It is an overlay classification across all categories of public land encompassing the Toolangi - Black Range forests, the Yarra River system of water supply catchments, and the catchments of Snobs Creek and Rubicon and Acheron Rivers.

Portions of the Sanctuary supports high densities of sambar deer. Council believes that it is no longer necessary to set aside areas of public land to protect the deer and is therefore proposing that the Sanctuary no longer apply (see Recommendation E8).

Taking into account those parts of the Sanctuary that lie within existing and proposed parks and reserves (where hunting will continue to be not permitted), some 150 000 ha remains within State forest and, under these proposed recommendations would become legally available for hunting.

The Council is also proposing that deer hunting not be permitted in the Eildon State Park (Recommendation A9). Recognising that only deer hunting by stalking (that is, without hounds) was permitted in the park, Council is further proposing (Recommendation E8) that the area of some 20 000 ha within State forest adjacent to the Eildon State Park (comprising the catchments to the Rubicon and Royston Rivers and Snobs Creek) be available for hunting by stalking only. This area is approximately equal in size to the Big River section of the Eildon park where hunting was permitted and supports a similarly high density of deer.

Historic sites

Sites of historic significance or interest (such as artefacts of mining, logging or early settlement) should be identified, and the sites and their environs protected. The desirability or otherwise of upgrading vehicular access to

each one should be considered when logging roads are being designed.

River zones

Under the new land use categories adopted by Council, streams and their frontages that are surrounded by freehold land are now dealt with under 'Natural Features Reserves'. Within State forest, however, streams remain part of the State forest category.

Major rivers and streams invariably constitute one of the most significant scenic elements in the landscape as well as provide a natural focus for recreation.

The variety and nature of the flora and fauna in the riparian zone often give it a greater environmental significance than the surrounding relatively dry, uniform forests. The riverine environment exhibits the typical focusing effect of a vegetation strip that is well suited to wildlife passing through a drier environment of less-favoured plant species. Also, the zone where the drier foothill and wetter riverine forests overlap contains the greatest variety of plant species and, therefore, the greatest diversity of faunal habitat types. Often the river valleys contain some of the more significant and attractive vegetation - such as the cool temperate rainforests.

The Council believes that all streams in State forest should be protected in accordance with the principles previously outlined. In the following, however, the Council has referred to a number that have significant scenic and nature conservation values, in addition to those stream sections bordered by rainforest.

While it is not practical to create nature conservation reserves along each of these streams, Council considers the importance of these streamside areas warrants the adoption of management practices that have as their major aim the protection of these areas' special natural features.

Council also believes there is further scope for the sympathetic development of recreational and interpretative facilities that would increase people's enjoyment and understanding of the area's river systems.

Council's final recommendations following several of its more recent studies, including the Alpine Area Special Investigation and the Hill End Special Investigation (both in 1983) provided for 'Natural Features Zones' along

the more significant streams in State forest.

With the adoption by Council of the new land use categories, the term "Natural Features Reserve" now applies to a specific group of land use categories. Accordingly, those streamside areas that would previously have been considered as 'Natural Features Zones' are now recommended as 'River Zones'.

River Zones refer to streamside areas in which the importance of the natural, scenic and recreational values warrant the adoption of management practices that have, as their major aim, the protection of those values. The Goulburn River downstream from its junction with the Black River to above Ten Mile, for instance, was afforded an equivalent designation in the Final Recommendations following the Alpine Area Special Investigation, and it is suggested for the current study that the zoning should be extended down to Lake Eildon.

It is proposed that River Zones be applied to eight rivers in Melbourne Area, District 2 (see Recommendation E5 below)

Heritage Rivers

Sections of several rivers in the study area have been afforded Heritage River status under the *Heritage Rivers Act 1992*.

The Heritage River classification is not a separate reservation but is an overlay; the underlying tenure continues. Heritage River status applies equally to sections of the river within parks as it does within State forest. Some sections or all of the Howqua, Big, Thomson, and Aberfeldy Heritage Rivers lie within State forest while the Goulburn and Yarra Heritage Rivers are largely surrounded by freehold land.

Heritage Rivers are discussed further, and recommendations made, in Chapter G - Natural Features Reserves.

Nature conservation

Significant vegetation communities (such as heathlands, rainforests, and wetlands) and colonies of rare or endangered plants and animals should be protected, following consultation with specialist groups such as the National Herbarium. Some species or communities may require long-term monitoring in order to assess their habitat requirements and the most appropriate methods of

management to ensure their survival. The managing authority may, in some cases, need to:

- * create and manage buffer zones of adequate size
- * erect protective fencing
- * provide additional weed and vermin control
- * manipulate fire regimes to maintain or enhance the viability of certain species
- * collect and store seed for use in planting and re-establishment programs.

It may be appropriate for the managing authority to involve local field naturalist groups or other interested parties in some of these management operations.

- * Protection strips along streams and watercourses in logging coupes should be linked to other areas in which timber harvesting does not occur, in order to provide wildlife corridors.
- * Sufficient mature and veteran trees in logging areas should be retained for fauna habitat.
- * All logged areas should, as far as possible, be regenerated with tree species native to the locality, and the species mix on the site should be retained.
- * Caution should be exercised in the aerial application of pesticides and fertilisers; no compounds that may significantly effect native animals should be used; any compounds should be carefully applied so as to avoid damage to retained native vegetation and aquatic environments.

Rainforests

The rainforests in the Central Highlands are remnants of a much wider, ancient distribution of plant communities, now generally restricted to sheltered gully sites where fire frequency has been low and moist conditions persisted.

The Department of Conservation and Natural Resources has conducted a detailed floristic study of rainforest that provides valuable information about the significance of particular stands and the distribution of rainforest species.

The range of nature conservation reserves proposed in these recommendations would increase the area of rainforest included in such reserves from 51 ha to 1484 ha - about 62 percent of the total area of rainforest on public

land in the study area (see Table 4 - Chapter C). Provision for the protection of other areas in State forest is outlined in Recommendation E4 below.

As fire, mechanical disturbance, and wind damage are the most common contemporary factors leading to rainforest degradation, each area to be protected will comprise, in addition to the stand of rainforest, a buffer of a width that will depend on various factors described earlier.

The Code of Forest Practices requires a buffer to linear stands of rainforest to be at least 20 m wide; elsewhere the minimum buffer is to be 40 m.

Leadbeater's possum

The status of Leadbeater's possum is discussed in Chapter C - Nature Conservation Reserves. That chapter also discusses the habitat requirements of the possum and proposes a set of principles and provisions for the conservation of that habitat.

Preliminary work carried out by DCNR indicates that (for the forest management blocks investigated to the present) about 10% of suitable Leadbeater's habitat coincides with areas that would normally be excluded from harvesting under the Code of Forest Practices. However, research suggests that many of these areas may not be preferred habitat.

Under current management prescriptions for Leadbeater's possum, all areas of mature and over-mature ash forest (equivalent for most purposes to the older-aged forests discussed in Chapter C and comprising some 8200 ha of the currently available net productive area of the forest) will be protected from all types of timber harvesting - other than low-intensity selective logging specifically undertaken for habitat development. In addition, all hollow-bearing trees will be protected. Nevertheless, the mature and over-mature ash forests are at present part of the resource on which the current legislated sustainable timber yields have been calculated; to not harvest them will reduce the total resource available to the industry.

DCNR recently started a study of the old growth forests of the Central Highlands to contribute to an investigation of the area by the Australian Heritage Commission (AHC). When finished, that study will provide information about the location, extent and

condition of the older-aged forests within the range of Leadbeater's possum. The Council has deferred making a recommendation about the status of the older-aged forests outside parks and reserves pending the outcome of the study for the AHC.

The prescriptions for Leadbeater's possum recognise that the regrowth ash forests change structurally and floristically through time and, at certain stages, will not contain all the essential resources required by Leadbeater's possum. The prescriptions would evolve as new data becomes available but would essentially reserve areas only while they contain optimal habitat - a concept of a temporary reserve system.

DCNR is also using aerial photograph interpretation to aid prediction of Leadbeater's possum habitat by the identification of areas of mature ash forest and large hollow-bearing trees emerging over regrowth forest. This is currently targeted at those Forest Management Blocks in which timber harvesting is to take place. Additional potential habitat is also identified during on-ground assessment of logging areas, as many hollow-bearing trees and the wattle understorey are below the canopy of the ash regrowth and are not evident on the photographs.

As discussed in Chapter C, the optimum Leadbeater's possum habitat currently available in the Central Highlands is found in those areas of 1939 ash regrowth which contain a high density (more than 12 per 3 ha) of dead, older trees and a wattle understorey. Harvesting here would impact on the current Leadbeater's possum population, although these forests are likely to be of little value as habitat in 50 years' time because the nest trees are collapsing at a rapid rate. In other areas where the density of nest trees is lower, the impact of timber harvesting on current Leadbeater's populations is probably less important. Silvicultural systems that do not entail clear-felling and which enhance habitat in the short term may mitigate this problem.

Within logging coupes, under current prescriptions, ash forests will be cut over every 80 to 120 years. Because ash trees do not begin to develop hollows until they are about 120 years old and are unlikely to provide suitable nest sites for Leadbeater's possum until they are around 200 years old, very few, if any, nest trees will be available on harvested sites in the longer term, unless alternative silvicultural practices are instituted.

Of the 170 500 ha of regrowth and older-aged ash forest in the study area, about 75 300 ha or 44% is either within parks and other reserves or is exempted from harvesting under the Code of Forest Practices because it is unmerchantable, occurs on steep or rocky areas, or is adjacent to streams. This leaves a net productive area of some 95 000 ha of ash forest currently available for wood production.

The combination of existing and proposed parks and reserves that conserve important attributes of the region also include key elements of the habitat of Leadbeater's possum. Together with management of the remaining State forest according to the Code of Forest Practices and the principles outlined in Chapter C, the area of ash-type forest indicated in Table 14 will be exempted from harvesting and will be permitted to develop naturally; providing habitat for hollow-dependent fauna in the long term:

Table 14

ASH TYPE FOREST RETAINED IN THE LONG TERM

Location of ash forest	Area (ha)
Existing parks, reserves, and the Maroondah, O'Shannassy and Upper Yarra catchments	35 087 (regrowth ash) 15 868 (mature ash)
Excluded by prescription and unsuitable areas	18 463 (regrowth ash) 5 932 (mature ash)
Additional areas in proposed conservation reserves	1 294 (net regrowth ash) 467 (net mature ash)
	77 111

Notes:

1. An additional 4128 ha net of mature ash forest is located in State forest. The Council has deferred proposals about this resource until the current study of old growth forest by DCNR is finished.
2. The total area of ash type forest in the study area amounts to some 170 500 ha; of which 119 574 ha is in State forest.

These proposed recommendations, together with existing provisions under the Code of Forest Practices and other measures for environmental protection, mean that some 43% of the total area of ash forest would be protected in the long term for wildlife habitat.

IMPLICATIONS OF PROPOSALS FOR NEW PARKS AND RESERVES

Given the information outlined earlier in this Chapter, the Council considers that the timber industry is a significant component of the Victorian economy. The Council believes that the industry is responding positively to the structural changes required and it would be inappropriate to deny the opportunity for a substantial increase in value adding and to create significant social disruption through the total withdrawal of the ash timber resource of the Central Highlands.

The Central Highlands will also continue to be a very significant source of high quality pulpwood for APM and could provide an important resource of ash pulpwood for any future expansion of pulp and paper production.

Following consideration of the need for adequate representation in nature conservation reserves of the significant environmental values occurring in the Central Highlands, the Council is recommending that a large proportion of the area (some 64%) be State forest.

Council recognises the importance of the study area for timber production and believes that, subject to the protection of specific values and the provisions of the Code of Forest Practices, this use should be permitted to continue in

State forest.

The production of hardwood sawlogs should continue to be the primary goal in harvesting operations. Pulpwood should be obtained only as a by-product from sawlog operations or in the course of salvage operations or silvicultural treatment such as thinning.

The Council also supports the value-adding initiatives of the timber industry and believes this should be encouraged to ensure that the different grades of wood are processed to their full value by putting them to their best use. It also supports export initiatives and those which replace imports of wood and paper products.

It is not the role of the Council to determine the extent or rate of use of forests for timber production. Market forces will determine the level of timber harvesting in State forest. Irrespective of the level, all operations must be sawlog-driven and carried out in accordance with the Code of Forest Practices and on an ecologically sustainable basis.

As outlined in Chapters A (Parks) and C (Nature Conservation Reserves), the Council also considers that there are significant environmental values in the Central Highlands that warrant specific protection in the reserve system. The Council is therefore recommending that a major new national park be established in the Central Highlands,

Table 15

WOOD RESOURCES WITHIN NEW RESERVES

Forest Type	Age Class	Volume Statement Net productive area (ha)	Area Statement	
			Sawlogs (cu.m)	Pulplogs (cu.m)
<u>Central FMA:</u>				
Ash species	mature	436	49 535	109 940
	1939 regrowth	766	142 339	167 004
<u>Dandenong FMA:</u>				
Ash species	mature	31	6 140	6 140
	1939 regrowth	500	83 126	111 822
Mixed species	mature	639	8 866	20 786
	1939 regrowth	49	5 385	14 743
Total volume			103 517	153 491

Note: There is no resource impact on the Central Gippsland FMA.

Source: Department of Conservation and Natural Resources

centred on the three main water supply catchments managed by Melbourne Water. These catchments are to be linked through the upper catchments of the Acheron River and Cement and Armstrong Creeks.

Implications for wood supplies

The two proposed recommendations which would affect wood resources are the Central Highlands National Park (Recommendation A7) and the Taggerty River - Whitehouse Creek fauna and flora reserve (Recommendation

C38). The wood resources within these areas, in terms of the respective Forest Management Areas are indicated in Table 15 above.

Implications for sustainable yield

If the Council's proposed recommendations were implemented, the impact they would have on the current sustainable yield of sawlogs is indicated in Table 16. These figures are based on the assumption that the sustainable levels of output would be reduced during the current licence period.

Table 16
POTENTIAL REDUCTION IN SUSTAINABLE YIELD
(proposed parks and reserves)

Forest management area	Scenario	Period of yield calculation	
		1993 - 2001	2002 - 2016
		Effect on sustainable yield (cu.m/annum)	
Central (Alexandra region)	<i>status quo</i>	115 000	152 000 [32% increase on the current level]
	Reduce output during the current period	112 000 [a reduction of 3000 cu.m (2.6%) from the current level]	148 000 [a reduction of 4000 cu.m (2.6%) from the anticipated level of 152 000]
	Defer impact until the next licence period	115 000 [no reduction from the current level]	148 000 [a reduction of 4000 cu.m (2.6%) from the anticipated level of 152 000, but a 28% increase on the current level]
Dandenong	<i>status quo</i>	41 000	65 000 [58% increase on the current level]
	Reduce output during the current period	38 900 [a reduction of 2100 cu.m (5.1%) from the current level]	62 800 [a reduction of 2200 cu.m (3.4%) from the anticipated level of 65 000]
	Defer impact until the next licence period	41 000 [no reduction from the current level]	62 400 [a reduction of 2600 cu.m (4%) from the anticipated level of 65 000, but a 52% increase on the current level]
Central Gippsland	<i>status quo</i>	183 000	208 000
	No impact from Council's proposals		

Source: Department of Conservation and Natural Resources.

Implications for employment and associated communities

The report following Stage 2 of the study undertaken for the Council by the consultants - Henshall Hansen Associates and Read Sturgess and Associates - provided "A Social and Economic Impact Assessment of Draft Proposed Recommendations for Land Use in the Central Highlands (Melbourne Area District 2), Victoria".

In this report the consultants estimated that the total reduction in sustainable yield of sawlogs (5100 cu.m per annum), that would arise if the proposed recommendations were implemented, would involve the displacement of about 22 jobs in the sawmilling industry, that is, in jobs involved to the point of products being despatched from the mill door. Beyond the mill door, a further 33 jobs could be displaced. Because the sawlogs are supplied to a number of sawmills in various towns, the impact would not necessarily be experienced in the one area. It would most likely be dispersed across the industry.

The Council is concerned about these implications and the flow-on effects in terms of employment, current and future investment and the potential implications for some local communities in the study area, particularly in the current economic climate. It is also aware that other requirements relating to the planning and management of State forests are also likely to reduce the productive area available for timber production, thereby further reducing sustainable yield levels.

It is for these reasons that the Council is recommending that, if the Government accepts the Council's proposals for parks and reserves in the Central Highlands, it should also maintain the current legislated sustainable yield levels until the year 2001. Long-term harvesting licences have been issued on the basis of these sustainable yield levels. However, after the year 2001, when sustainable yield levels are estimated to increase by 32% and 58% in the Central and Dandenong FMAs respectively, the Council is recommending that legislated sustainable yield levels be revised downward to take account of the resources included in the new proposed parks and reserves in the Central Highlands, as well as the implications of other requirements that may result in reductions to sustainable yields.

Under this scenario, the Council's proposed

recommendations would have no implications in terms of sustainable yields until 2002. As indicated in Table 16, there would then be a reduction of about 2.6% and 4% per annum during the licence period 2002 to 2016 in the Central and Dandenong FMAs respectively. However, because of the estimated increases in these FMAs beyond 2001, the net result after the Council's recommendations will still be an increase in sustainable yield levels (over and above current levels) of 28% and 52% in the Central and Dandenong FMAs respectively.

This proposal would avoid any direct or indirect loss in employment in the industry as a result of the Council's recommendations. However, the potential employment increases after 2001 may be less than anticipated. That is, some potential jobs in the future may be foregone.

These figures do not take account of requirements outside the recommendations of the Council that may also reduce sustainable yield levels, or of re-assessment of the resources which may either permit an increase or require further decrease in the sustainable output. Industry demand is also uncertain.

It is recognised that this approach is utilising future increases in timber availability to offset current reductions, and that some of the resource may need to be harvested earlier than intended, but the Council believes that it is necessary and appropriate to minimise the short term impact of the proposed land use changes. It also provides an opportunity to delay decisions about the actual level of sustainable yields from the three FMAs in the Central Highlands until more comprehensive information is available.

Furthermore, as indicated earlier in this chapter, the timber industry based on native hardwoods is undergoing significant changes in response to the increasing use of softwood timbers in traditional hardwood markets. The hardwood industry has already made important changes and is shifting towards the production of greater volumes of dried and seasoned hardwood for use in producing value-added goods. It is also expanding existing markets for these products and developing new markets.

The industry maintains that it will be able to use all available timber supplies provided it can develop domestic and export markets with

certainty as to the future availability of wood. By 2001, the State Government will know whether the industry can achieve this goal and it will then be better placed to set appropriate sustainable yield levels, taking into account both environmental and economic factors. If the industry does achieve its goal, the government will have the potential to provide significant volumes of additional timber after 2001 from the Central Highlands.

The other important point is that studies regarding timber-related issues in the Central Highlands will be completed in the next two to three years and the findings of this work will be an important input to the review of sustainable yield levels after 2001.

Given the significant changes that are taking place in the timber industry, including the uncertainty about the contribution that plantation timbers might play in the future, the Council believes that this course of action is appropriate and justified and provides the greatest flexibility for the Government in terms of making decisions about the long-term allocation of timber from State forests in the Central Highlands.

THOMSON RIVER CATCHMENT

A number of submissions proposed that the whole of the Thomson River catchment should be included in a National Park. As part of its consideration of parks and reserves in the Central Highlands, the Council undertook a detailed evaluation of the representation of major land systems, vegetation, and fauna in existing conservation reserves and identified any gaps in that representation.

Based on this evaluation, the Thomson catchment did not contribute significantly in terms of overcoming some of the deficiencies identified and, as such, the Council considered that the catchment should not be included in the 8conservation reserve system.

That is not to say that the Thomson catchment has no conservation value. On the contrary, it contains some significant, but generally localised, sites with important botanical and historical values. The Council considered that such values were better represented elsewhere and that, in the case of important localised sites, these could be adequately protected by regional prescriptions and the Code of Forest Practices.

At the present time, the Thomson catchment provides for a range of uses including recreation, water production, and timber production. Unlike some of the other water supply catchments providing water to the Melbourne metropolitan area, the Thomson is not a 'closed catchment'. That is, other activities, such as recreation and timber production, are permitted. The reason such activities can be permitted is due to the long detention times for water in the Thomson Reservoir and, subsequently, the Upper Yarra Reservoir which eliminates the risk of water-borne disease reaching metropolitan consumers.

More recently, it has been proposed that all timber harvesting cease in the Thomson catchment on the basis that harvesting on an 80-year rotation is reducing the volume of water that could be supplied from the catchment. This was the subject of an economic study and is discussed in the Chapter D - Water Production. The Australian Conservation Foundation (ACF) suggested that Melbourne Water should pay to replace wood resources or compensate the timber industry and dependent industries for timber foregone if logging were to stop in the catchment.

If this were to proceed, some tens of thousands of hectares of new eucalypt plantations would need to be established to (eventually) substitute for the hardwood sawlog and pulpwood resources of the Thomson catchment. The ACF envisaged that Melbourne Water would pay for the purchase of land and the plantation establishment costs in return for the benefit of future increased flows that would result from the cessation of logging in the catchment. It would appear that, under this proposal, Melbourne Water ratepayers would be expected to pay now for a gradual increase in flow into the distant future.

A number of conservation groups are suggesting that domestic and overseas softwood timber will supply virtually all domestic markets for structural timber at the expense of hardwood timbers. They consider that the shift to plantation timbers will mean that only small volumes of specialty hardwoods will be marketable within the next 10 to 15 years. On the assumption that the hardwood industry is in decline and will only be small in the future, conservation groups are advocating a phase-out of all timber harvesting from native forests over the next five to ten years.

On the other hand, industry argues that it is responding to the loss of traditional markets for hardwoods by developing new markets for kiln-dried value-added hardwood products. It further argues that, instead of the demand for hardwood timbers from native forests declining, similar volumes of wood will be required to supply new and expanding markets (both domestic and overseas) in value-added products.

Available evidence suggests that the timber processing industry is responding to this change and significant levels of investment have been made in further processing facilities in recent times.

It is difficult to say at this point in time which scenario will eventuate but industry argues that the outcome should be determined by market forces, not government policy intervention.

However, the Council considers that government has a responsibility to set the overall framework with respect to the use of a public resource. Council therefore believes that the community has the right to know how a public resource will be used in the future.

In relation to the future of the timber industry a number of issues must be addressed:

- * First, whether net social, economic and environmental benefits would accrue by excluding timber harvesting from all native forests and replacing it with timber from plantations of both hardwood and softwood on private land

If such net benefits would accrue, then a number of other matters should be clarified:

- * the area of land that would be required to match the existing sustainable levels of output of sawlogs and pulpwood
- * whether sufficient land of suitable site quality is available for plantations within economic distances of major processing facilities to meet virtually all future timber needs
- * whether plantations can produce the desired quality of sawlog and pulpwood suitable for value-added sawn timber and internationally competitive paper commodities
- * whether current planning constraints on the establishment of plantations on private

land can be overcome

- * what impact a major expansion of plantations would have on agricultural production
- * the cost and the source of funds to purchase private land
- * whether the difficulties associated with leasing private land for plantations be overcome to the satisfaction of the landholder, the local community, the timber industry, and the government
- * the social implications of a major expansion of plantations in rural areas
- * the contribution that agro-forestry and farm woodlots could make to sawlog and pulpwood requirements
- * the environmental benefits and costs of plantation establishment
- * the period of transition from native forests to plantations

The Council believes that work should be undertaken to address these matters but, until satisfactory answers are available, native forests will be required to supply timber for both sawn products and paper commodities. The timber industry is a vital component of the Victorian economy and of many local communities. It has the potential to make a significant contribution to import replacement, provided that the industry can be internationally competitive. An important component in achieving that competitiveness is security of supply of resources and the Council believes that timber from State forests will provide that security for the foreseeable future, in accordance with legislated sustainable yields and proper management of forests, as specified in the Timber Industry Strategy.

If it becomes clear in the future, however, that the demand for hardwood timbers from State forest is declining, it would be wise to ensure that areas scheduled for harvesting were selected where no external costs - such as reduction in water yield in domestic water-supply catchments - would result. In determining the relative priorities of areas not to be harvested in the event of such a reduced demand, the consultants' economic study would indicate that the Thomson catchment would be among those with the highest priority for re-assessment.

STATE FOREST MANAGED BY MELBOURNE WATER

Substantial areas of public land in Melbourne Area, District 2 are managed by Melbourne Water.

After accounting for those areas actually involved in water production and the proposed parks, a number of areas remain, such as those abutting aqueducts or buffers to the water supply catchments, which are managed by Melbourne Water but do not fall into these categories.

Melbourne Water retains these areas principally for fire protection purposes or to control access around the water supply facilities.

The areas form integral parts of the regional landscape. Various activities are permitted in the buffers, including timber harvesting, farming, or quarrying.

Although these areas are described in this chapter and shown as part of State forest on Map A, Recommendation E7 below provides for them to remain the responsibility of Melbourne Water.

STATE FOREST

Recommendations

E1 That the areas shown on Map A be used in accordance with the principles outlined above to:

- (i) supply water and protect catchments and streams
- (ii) produce hardwood timber subject to:
 - (a) the independent monitoring committee, referred to in the Timber Industry Strategy, continuing to oversee all aspects of timber utilisation under the Value Adding Utilisation System
 - (b) harvesting of timber proceed in accordance with the Code of Forest Practices and Regional prescriptions, approved only after community consultation
 - (c) research programs established to monitor the environmental effects of harvesting operations be continued and adequately funded to ensure statistically valid results and modifications to operational procedures and principles be progressively made as new information becomes available
 - (d) rotation length continue to be geared to the production of high-quality sawlogs, with a minimum length of 80 years
 - and
 - (e) a range of silvicultural strategies for achieving adequate regeneration within State forest being investigated under the Silvicultural Systems Project be evaluated by the Department of Conservation and Environment, and those that are determined to be the most appropriate methods (taking into account environmental, economic, social and safety factors) be adopted for the Central Highlands forests as soon as possible
- (iii) conserve native plants and animals, and provide opportunities for the development of wildlife conservation techniques
- (iv) provide opportunities for open-space recreation (including hunting) and education
- (v) produce honey, forage, gravel, sand, road-making materials and other forest products
- (vi) provide opportunities for exploration and extraction of earth resources, subject to the principles and guidelines outlined in Chapter L - Earth Resources

and that they remain or become State forest, managed by the Department of Conservation and Natural Resources.

Note:

This recommendation covers land recommended by the Council in 1977 for hardwood production, forest area (adjacent to plantations) and uncommitted land, with the exception of areas for which other recommendations have been made in this review.

(continued)

Recommendations - (continued)

Pulpwood production

E2 That pulpwood production be permitted subject to:

- (i) it being tied strictly to the harvesting of sawlogs in an integrated operation unless it is obtained from salvage operations or silvicultural thinning programs in regrowth stands aimed at providing a higher production of sawlogs at final harvesting
- and
- (ii) it be permitted only on those areas that presently carry or have the potential to carry forests greater than 28 metres top stand height.

Visual management system

E3 That the visual management zones identified by the application of the Visual Management System be incorporated in regional plans and the land be managed accordingly.

Rainforest

E4 That the areas indicated generally on Map A be used to conserve rainforest

that

- (i) each area be protected by a buffer, the width of which should be delineated taking into account the factors outlined earlier
- (ii) when logging operations are conducted in the adjoining forests, no tree is to be fallen into the rainforest or buffer
- (iii) passive recreation such as nature study be permitted
- (iv) logging and grazing not be permitted
- (v) all plans for new roads or road improvement works for those sections falling within rainforest should be submitted to the authority managing the rainforest for approval
- (vi) that they be permanently reserved from timber harvesting in accordance with the Code of Forest Practices

and that these areas continue to be managed by the Department of Conservation and Natural Resources.

Notes:

1. Some areas of rainforest are located within Melbourne Water land included under Recommendation E7 below. These areas would remain under Melbourne Water control but management should be in accordance with this recommendation.
2. At the scale of mapping used, the boundaries to the areas cannot be accurately defined nor are all the areas of rainforest indicated. The areas are indicative only of the location of sites of rainforest occurrence.
3. Further areas of rainforest may be identified in the future and this recommendation should also apply to these areas.

River zones

E5 That, for those sections of streams described in Schedule 1 below and indicated by cross-hatching on Map A, primary aims of management be:

- (i) the protection of natural and scenic features

(continued)

Recommendations - (continued)

- (ii) the provision of recreational facilities and interpretive aids where this does not conflict with (i) above

that

- (iii) timber-harvesting and gravel extraction not be permitted

- (iv) any new roading be constructed only where essential for the purposes of management, protection, and transport of timber and be designed to minimise effects on scenic and nature conservation values

and that management be the responsibility of the authority managing the adjacent public land.

Notes:

1. Portions of some streams designated as River Zones also include areas for the protection of rainforest. Management in these portions should give priority to the protection of the rainforest, but should recognise that they also contain a valuable recreational and scenic resource.
2. The hatching on the map should not be taken as delineating exact boundaries to the River Zones. It is intended that these zones should include both the visual corridor (comprising those parts of the valley that can be seen from the stream) and the environmental sequence from relatively dry foothill country, through the species-rich intermediate zone, to the riverine section. In many areas the visual corridor will include this sequence and as such will determine the width of the zone. In other places, however, not all of the environmental sequence will be visible from the stream and in these cases the natural features zone will extend beyond the visual corridor.

It is not intended that the width of river zones delineated under these guidelines would be less than the buffer strips along streams required by forest management prescriptions or delineated by land use determinations for a water supply catchment. While the extent of the zone will vary according to local circumstances, it is expected that it will seldom be less than 100m or greater than 300m from the bank on either side of the stream. This zone should be delineated on management plans where appropriate.

Special features to be protected

E6 That the values in areas of State forest, listed in Schedule 2 below, be protected by the implementation of management prescriptions.

State forest managed by Melbourne Water

E7 That the areas of State forest, described below, continue to be managed by Melbourne Water for such purposes as that authority may decide.

These areas include:

- * buffers to the Wallaby Creek and Maroondah catchments
- * land abutting the O'Shannassy and Coranderrk aqueducts
- * land at McMahon's Creek.
- * land in the Cement Creek basin

Notes:

1. The Wallaby Creek Lodge and farms in the buffer to the Wallaby Creek catchment are excluded from the area considered under this recommendation (see Chapter N).
2. A small plantation of Californian redwood planted in the buffer to the Wallaby Creek catchment was established in the early 1930s. It is of historical significance as a contrast to the adjacent mountain ash forests and as a relic of the experiments of the former Melbourne and Metropolitan Board of Works.

(continued)

Recommendations - (continued)

Central Highlands Sanctuary

E8 That:

- (i) the Central Highlands Sanctuary be revoked
- (ii) the area of about 20 000 ha comprising State forest in the catchments to the Rubicon and Royston Rivers and Snobs Creek (adjoining the Eildon State Park) be available for deer hunting by stalking only.

Schedule 1

STREAMS ON WHICH RIVER ZONES APPLY

Goulburn River: (upstream of Lake Eildon to Woods Point)

Notes:

1. That portion of the river in Council's Alpine study area already carries such a zoning.
2. An extensive, relatively intact example of riparian forest and associated communities is located between Knockwood and Woods Point.
3. The rare species - common spleenwort (*Asplenium trichomanes*) and cliff cudweed (*Gnaphalium umbricola*) - are located on a cliff overlooking the river near the Jamieson-Woods Point Road.
4. Large-footed myotis (*Myotis adversus*) - a rare species - and the restricted common bent-wing bat (*Miniopterus schreibersii*) are also found here.
5. The river has high scenic value and is popular for fishing and canoeing.

Jamieson River

Note:

That portion of the river in Council's Alpine area already carries such a zoning.

Tyers River: (west branch)

Notes:

1. That portion of the West Branch that fell within the area covered by Council's Hill End Special Investigation already carries such a zoning.
2. The alluvial plains support well-developed riparian forest with small scattered stands of cool temperate rainforest.
3. The rare sooty owl (*Tyto tenebricosa*), the most westerly population in Victoria of the leaf green tree frog (*Litoria phyllochroa*), and possibly the rare large-footed myotis (*Myotis*

adversus) and the rare tree goanna (*Varanus varius*) are located within this zone.

Murrindindi River: (upstream of the Murrindindi Natural and Scenic Features Reserve - Recommendation G43)

Notes:

1. This section of the river supports a wide variety of well developed riparian vegetation communities - riparian forest, riparian thicket and swampy riparian forest, and cool temperate rainforest.
2. A popular stream for fishing and with a number of picnic sites.

Acheron River: (downstream of the proposed Central Highlands National Park)

Notes:

1. A similar zone has been delineated under current Forest Management Plans.
2. A wide variety of relatively mature and undisturbed riparian vegetation occurs along this valley with cool temperate rainforest in its upper reaches.
3. The remains of concrete seasoning kilns and a steam engine of Feiglin's No 1 sawmill (1934) are located in this zone.
4. This zone includes the popular tourist route - the Acheron Way and "Somers Park" and a number of other picnic sites.

Snobs Creek: (including the Snobs Creek Falls)

Notes:

1. A similar zone has been delineated under current Forest Management Plans.
2. The rare species - common spleenwort (*Asplenium trichomanes*) is located at Snobs Creek Falls.

La Trobe River: (upper and middle sections)**Note:**

Downstream of Noojee, this zone contains well developed riparian forest and an associated unusual heathy foothill forest variant with a sparse, tall shrub-layer of black sheoke (*Allocasuarina littoralis*)

Toorongo River: (including the Toorongo Falls)**Note:**

The continuous strip of riparian forest and wet sclerophyll forest here retains a high level of naturalness and includes scenic fern gullies.

Schedule 2**VALUES TO BE PROTECTED IN STATE FOREST**

These are grouped by geographic regions and Forest Management Areas to facilitate listing.

Mounts Tallarook and Disappointment, Toolangi, Black Range forests

(Central Forest Management Area - west of the Maroondah Highway)

Historic site:

- * Mount Robertson mining battery

Nature conservation:

- * rocky outcrop scrub community at Strath Creek Falls
- * occurrence of tree geebung (*Persoonia arborea*) in the Yea River headwaters
- * population of eastern grey kangaroo (*Macropus giganteus*) at Mount Tallarook

Recreation sites and landscape:

- * landscape values of the forested escarpments of the Mounts Tallarook and Disappointment forests as viewed from the Hume and Goulburn Valley Highways
- * Murchison Falls and Strath Falls and their environs
- * the natural environs of the Mounts Despair and Disappointment lookouts
- * Sylvia Creek falls and its environs
- * the environs of the Toolangi - Black Range Forest Drive

Marysville, Rubicon, Big River, and upper Goulburn River forests

(Central Forest Management Area - east of the Maroondah Highway)

Historic sites:

- * geodetic cairns at Mt Useful (Central Gippsland), Mt Matlock, and the Switzerland Ranges (west of the Maroondah Highway) - constructed during a survey in the 1860s
- * townships along the upper Goulburn River at Kevington, Tunnel Bend, Knockwood, A1 Settlement, and Woods Point
- * Sites of former hotels and other

settlements along the old Yarra Track, such as Paradise Plains and the Travellers Rest Hotel.

- * Enoch's Point mines (and the nearby Luck's All Mine) - relatively intact sites dating from between 1864 and 1915
- * Old Kevington township and the adjacent Sailer Bills Creek mines
- * the environs of Gaffney's Creek settlement, and the adjacent Wallaby Creek mines - relatively intact sites dating from between 1864 and 1912, and from 1923 to 1927
- * Clarke and Pearce No.4 Mill, Rubicon; an extant pre-1939 saw mill and tramway
- * Clarke and Pearce No.1 Mill (1907 - 1939); including a large sawdust heap
- * Mount Margaret tramway - Marysville; includes one of Victoria's most intact incline features
- * Marysville tramways; bridges, gearing, huts, and stables dating from 1934 to 1945/55

Nature conservation:

- * unusual occurrence (at an unusually low altitude) of sub-alpine woodland below montane damp forest, at Mount Strickland
- * mature and relatively undisturbed riparian vegetation of Springs and Oaks Creeks (occurs both within and upstream of the Big River Heritage River)
- * relatively undisturbed and well-developed examples of riparian forest, swampy riparian forest and riparian thicket on the Torbreck River
- * the rare forest sedge (*Carex alsophila*) in the headwaters of the south branch of the Torbreck River
- * the rare Baw Baw berry (*Wittsteinia vacciniacea*) on Storm Creek, in the headwaters of the south branch of the Torbreck River and in the headwaters of the Royston and Taggerty Rivers
- * the rare snowdrop wood-sorrel (*Oxalis magellanica*) in the headwaters of the Royston and Taggerty Rivers

- * stands of the vulnerable mealy stringybark (*Eucalyptus alligatrix*) near the junction of the Taponga and Big Rivers
- * box woodland, a community of limited distribution, and the stand of white box (*Eucalyptus albens*) in the Mt Proctor / Puzzle Range area
- * a stand of the rare Omeo gum (*Eucalyptus neglecta*) on Monument Creek (a tributary of Frenchmans Creek)
- * the rare powerful owl (*Ninox strenua*), and possible populations of the rare species large-footed myotis (*Myotis adversus*) and mountain dragon (*Amphibolurus diemensis*) in the Taponga River catchment
- * the rare smoky mouse (*Pseudomys fumeus*) and the rare mountain dragon in the Mount Terrible area
- * the habitat of endangered Leadbeater's possum (*Gymnobelideus leadbeateri*) and other species closely associated with mountain ash forest - see also the discussion earlier in this chapter and in Chapter C
- * the habitat of the endangered spotted tree frog (*Litoria spenceri*) - see also the discussion in Chapter C
- * the habitat of the endangered brown (barred) galaxias (*Galaxias olidus* var *fuscus*) in the headwaters of the Goulburn River system - in the Taggerty River, Pheasant Creek, and Perkins Creek

Recreation sites and landscape:

- * the natural environs of Lady Talbot Drive, Marysville (portion lies within the proposed Taggerty River--Whitehouse Creek fauna and flora reserve - C38)
- * landscape values of the forested escarpments as viewed from the Maroondah and Goulburn Valley Highways
- * the environs of the Marysville to Woods Point and Warburton to Woods Points Road, and the Lake Mountain access road

Yarra forest

(Dandenong Forest Management Area)

Historic sites:

- * "The Bump" tunnel; the longest timber tramway tunnel in Victoria
- * winch and landing sites - Big Creek Road - an excellent example of post war timber harvesting technology
- * State sawmill site - remains of the first government sawmill

Nature conservation:

- * the large population of the otherwise severely depleted black sheoke (*Allocasuarina littoralis*) at Paul Range
- * the now rare, examples of ecologically mature and undisturbed damp sclerophyll forest on Starvation Creek (north)
- * populations of the rare Nunniong everlasting (*Helichrysum rogersianum*) at McMahon's Creek (north)
- * the occurrences of the rare small fork-fern (*Tmesipteris ovata*)

Recreation sites and landscape:

- * landscape values of the Ben Cairn to Mount Donna Buang face and land bordering the Corranderrk and O'Shannassy aqueducts
- * the natural environs of Mount Beenak
- * the environs of the La La Falls at Warburton
- * the Ada Big Tree and associated walking tracks

Tarago--Latrobe, Neerim, and Tanjil--Tyers forests

(Central Gippsland Forest Management Area - west of the Baw Baw road)

Nature conservation:

- * the rare gully grevillea (*Grevillea barklyana*) within the upper Bunyip and Tarago Rivers, and Ryson Creek catchments
- * the rare bristly shield-fern (*Lastreopsis hispida*) within the upper Bunyip and Tarago River basins
- * the rare tree geebung (*Persoonia arborea*) within the upper Bunyip and Tarago River basins
- * the vulnerable tall astelia (*Astelia australiana*) within the upper Bunyip River catchment. Council is aware that a moratorium has been placed on timber harvesting in some areas to protect this species - see Chapter C.
- * the habitat of Leadbeater's possum, the broad-toothed rat, and other species closely associated with mountain ash forest
- * the rare forest sedge (*Carex alsophila*) on the Toorongo Plateau
- * the rare Baw Baw berry (*Wittstenia vacciniacea*) on the Toorongo Plateau and the slopes of Mount Toorongo

Recreation sites and landscape:

- * the scenic values of the open grassland on the Toorongo Plateau (bordering the Toorongo road and the track to Mount

- * Toorongo
- * Cascade Creek Falls
- * the environs of the Spion Kopje and Mount Toorongo lookouts
- * the natural environs of the Mount Baw Baw road

Tanjil, Tyers, Neerim, Boola Boola, and Thomson forests
(Central Gippsland Forest Management Area - east of the Baw Baw road)

Historic sites:

- * the Jordan alluvial gold field; extant features include a Chinese ceremonial oven at Jerico (the only clearly Chinese feature remaining of a major Chinese settlement on the Jordan), the tunnel at Jerico, and the cemeteries at Jerico and Red Jacket
- * White Star mines; two small mines that operated intermittently between 1864 and 1910. White Star No1 mine comprises a tunnel connected by a short tramway to a battery site; an intact site retaining a range of artefacts - an excellent example of a small scale operation. A number of adits and the remains of a boiler indicate the site of White Star No 2 mine
- * Dry Creek - New Chum mines; the largest and most intact ore roasting kilns known in the State
- * Ingram's skyline - Western Tyers; the only surviving evidence of skyline logging in the study area

- * Mill sites, tramways and associated trestle and makeup bridges in and around Western Tyers and Erica
- * Alstergren's sawmill - Thomson valley; relics, including a dug-out, of a sawmilling operation that operated continuously between 1932 and 1950
- * Bruntons Bridge; a key bridge and minor settlement beside the main road to the Walhalla gold fields

Nature conservation:

- * the rare undescribed species of broom-heath (*Monotoca* sp. aff. *elliptica*) near Mount Useful
- * the mature stand of montane wet forest dominated by unusually large Tingaringy gum (*Eucalyptus glaucescens*) on the south-western face of the Baw Baw Plateau
- * the rare Baw Baw berry and cliff cudweed (*Gnaphalium umbricola*), and the vulnerable long clubmoss (*Lycopodium varium*) and elongate fork-fern (*Tmesipteris elongata*) on the south-western face of the Baw Baw plateau

Recreation sites and landscape:

- * the environs of the Alpine Walking Track, the route of which is indicated on Map A (see also Chapter J - Community Use Areas; guidelines for the protection of the Alpine Walking Track are provided in Appendix VII)

F. HISTORIC AND CULTURAL FEATURES RESERVES

Sites of historical importance associated with pre-European occupation - and with European exploration, pastoral and agricultural development, settlement, and the utilisation of timber, water and mineral resources, are found on both private and public land through the Melbourne Area, District 2.

For this review, the Council commissioned the report 'Aboriginal Occupation of the Melbourne Area, District 2' (Goulding 1988), which outlined pre-contact Aboriginal culture and post-contact history, summarised archaeological studies, and discussed the significance of particular sites.

In addition, the Council commissioned the Historic Places Section of the Department of Conservation and Natural Resources to carry out an investigation of the 'European' history of the area. The resulting report contains a substantial and wide-ranging general history, and detailed reports on some 340 historical sites (Supple *et al.* 1980), which forms the basis for the following recommendations.

The general history - 'Fire, Water, Timber and Gold' - identified and introduced the following major themes which (except for fire) also classified the sites: tracks (and settlement), farming, mining, forests (and sawmilling), fire, water, and recreation. These themes represent uses that had a major influence on the development and condition of the study area. This was subsequently expanded into the book 'Secrets of the Forest' (Griffiths, 1992) which captures the fascinating history of the Central Highlands ash forests.

The reports from the studies of both Aboriginal occupation and European history are available

for inspection at the Council's office.

There is considerable interest in the community about the State's history. This interest is likely to increase, particularly as more becomes known about historical relics located on public land. Council considers that sites of historical interest should be managed to promote public awareness of the history of the area and that they should be protected as far as possible from progressive deterioration due to exposure to the weather and from accidental or deliberate damage by the public.

Historic and Cultural Features reserves are areas that contain important relics or have historical associations, and range in size from large areas encompassing several historical themes, to small reserves that generally have only one theme represented. The large areas could ultimately have interpretative centres and recreational facilities such as picnic areas and walking tracks. Other reserves may be too small for the development of recreational facilities, although some aids to interpretation could be provided.

Several sites of historic and archaeological importance have been included in parks or other reserves. After consideration, the Council resolved to recommend designation of the following historic and cultural features reserves to represent the area's main historic themes. The proposed reserves are grouped according to their level of significance assessed by the Department of Conservation and Natural Resources. These recommendations are complemented by schedules of significant features within other land use categories which should also be protected (see for instance, Chapter E - Timber Production and State Forest).

HISTORIC AND CULTURAL FEATURES RESERVES

Recommendations

FI-F31,F35 That the areas described below be used to:

- (i) protect specific sites that have significant cultural associations or contain relics of buildings, equipment, construction works, or other artefacts relating to the history of the locality
- (ii) provide opportunities for recreation and education associated with the history of the locality compatible with (i) above

(continued)

F1-F31, F35 - Historical and Cultural Features (continued)

that

- (iii) unless specified below, other uses, such as extraction of earth resources and timber harvesting, be permitted at the discretion of the land manager where such uses do not adversely affect the features of historic significance (see Note)
- (iv) the re-use of buildings, such as court houses and railway stations, including for community uses, be permitted where appropriate, subject to maintenance of their building fabric and, where relevant, their furniture and fittings

and that they be permanently reserved under Section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources except where otherwise specified.

Note:

Normal practice in the management of such reserves is that earth resource extraction is not permitted within 100 m of historic features.

Existing reserve

F1 Walhalla (2500 ha)

Walhalla was recommended by Council as a historic area in 1977, and includes features associated with the township of Walhalla, numerous old mine sites, miners' tracks, and remnants of tramway systems.

The gold mines of Walhalla were among the most productive in Victoria. They stimulated substantial building within the town, construction of an extensive network of tramways to supply timber for the mine boilers and pit props and later, establishment of a narrow gauge railway between the town and Moe. Smaller settlements developed around the main town.

Alluvial gold was first discovered at Stringers Creek in January 1863, causing a rush. Larger companies brought in batteries and treatment plants from mid-1864, and development of the

area reached its peak between 1885 and 1895 when the population reached about 4500.

Fifteen mines worked the main reef, producing nearly one and a half million ounces of gold. It was the richest gold-bearing reef in the world. At the beginning of the 20th Century less gold was being found, costs increased as the mines went deeper, and the outbreak of World War I led to labour shortages. The major mines had closed by 1914 and the town gradually declined.

Despite the loss of many historic features through fire, flooding or relocation, a large number remains. Part of the Long Tunnel Extended Mine, including its underground machinery chamber, has been re-opened as a tourist attraction. These features, together with the surrounding environment, provide a vivid representation of Walhalla's highly productive gold mining era, and the area is considered to be of national historical significance.

Walhalla

Recommendations

F1 That the area of approximately 2500 ha indicated on Map A be used in accordance with the general recommendations for historic and cultural features reserves outlined above

and that

- (v) managing of public land be co-ordinated with planning for private land to ensure the preservation of this part of Victoria's history, and to create an environment that will allow visitors to appreciate the historical significance of the town
- (vi) timber-harvesting be subject to the management plan and conducted in sympathy with the prime objective of a historic area.

(continued)

F1 - Walhalla (continued)

Notes:

1. The boundary of the historic area recommended by Council in 1977 excluded the then township of Walhalla. The township boundaries were amended in 1983.
2. The recommended boundary now includes the whole of Maidentown, a small outlying settlement associated with the early gold mining era of Walhalla. The township straddles the existing boundary.
3. A management plan was approved for the Walhalla Historic Area in 1988 and is being implemented by the Department of Conservation and Natural Resources and the local community. A Walhalla Historic Area Advisory Committee has been established.
4. Council is aware of interest in re-opening the Long Tunnel Extended Mine for production mining.
5. A problem with shooting close to Walhalla township, resulting in property damage, has been brought to Council's attention. The Australian Deer Association is bringing this matter to the attention of its members through its publication 'Australian Deer' and other newsletters, although it is recognised that the hunters causing the problems may not be Association members. The Council's view is that if this matter is not resolved before final recommendations are prepared, the option of a no-hunting area will be considered at Walhalla township.

F2 Additions to the Walhalla Historic Area

Public land within Walhalla Township (55 ha)

Public land contains a number of features from the gold-mining heyday of the township of Walhalla which are considered by historians to be of State significance. They include the cemetery (1873), band rotunda (1896), post office (1885/86), cricket ground, the entrance to one of the main mines and associated mullock heaps, relic mining machinery, tramway formations, and the site of a Chinese vegetable garden. The township was the centre of activity during the gold-mining era and is now the focus of recreation in the area.

Council believes that it is now appropriate to include all of the public lands of the township in the surrounding historic area.

Southern extension (330 ha)

This area contains a number of sites and features associated with the gold-mining era of Walhalla. One of the outlying Walhalla settlements (Happy Go Lucky), at least four gold mine sites, a section of the old Walhalla coach road, and the Thomson River tunnel are included. The tunnel was probably cut by Chinese miners through a hill to divert river flow, allowing the alluvial gold to be extracted from the dry bed.

Recommendation

F2 That the area of 330 ha indicated on Map A be added to the Walhalla Historic and Cultural Features Reserve and used in accordance with the general recommendations outlined above and recommendations F1(v) and (vi) above.

Proposed new reserves

The following new reserves are largely based on information provided in the site reports for the history of the area. They are listed according to their relative significance - national, State and regional or local - as identified in those reports.

Proposed new reserves

Recommendations

F3-31, F35 That the areas indicated on Map A and described below be used in accordance with the general recommendations for historic and cultural features reserves outlined above.

(continued)

Proposed new reserves (continued)

Note:
For discussion and recommendations regarding disused railways, relevant to proposals F20(g), F21 to F28, and F30, refer to Chapter N - Uncategorised Public Land.

Areas of national significance

F3 Gulf Station, Yarra Glen (16 ha)

This is one of the oldest groups of farm buildings remaining intact in Victoria and the most complete example of timber slab building construction. William Bell became a landholder at Yarra Glen in 1854 and with his three sons constructed the complex of 15 shingle-roofed timber farm buildings in the 1850s and 60s. The property remained in the same family until after World War II and, other than a shearing shed, some additions to the homestead, and roofing of the buildings with corrugated iron, the farm buildings have changed little since the 1850s.

In addition to the original homestead there is a separate more recent homestead, stables, kennels, piggery, butchers shop, school house, slaughterhouse, sheep-dip, shearing shed, and a combined milking shed, smithy, and hayshed.

Recommendation

F3(v) That the educational, recreational, and tourist values of the reserve be protected.

F4 Emerald (Puffing Billy) Railway (400 ha)

This railway originally operated between Upper Ferntree Gully and Gembrook and was used for the carriage of goods and passengers from 1900 to 1954. Since 1962 that section of the line from Belgrave to Menzies Creek and, since 1965, to Emerald, has been operating as a tourist railway. In 1977 the responsibility for the railway was vested in the Emerald Tourist Railway Board, a statutory body responsible to the Minister for Transport which, in practice, delegates much of the day-to-day management and operation of the railway to the volunteers of the Puffing Billy Preservation Society whose activities are a key component of its success and viability. Reconstruction of the original railway line between the present terminus at Emerald Lake and Gembrook is in progress and is expected to be open to traffic in the year 2000.

The Puffing Billy railway is the only remaining narrow gauge railway operating in Victoria. It was one of four built after the depression of the 1890s when the construction of additional standard broad gauge lines was considered too expensive, especially in hilly terrain.

Features of special historic interest include the engines and carriages, many of which are part of the original rolling stock used on the line; the curved 90 metre long timber trestle 'Horseshoe Bridge' over the Monbulk Creek; extant features of the original station grounds, such as sidings, platforms, station buildings and sheds at Belgrave, Selby, Clematis, Emerald (of 'outstanding historic interest'), the Nobelius Nursery Siding, Fielder, and Gembrook (water tower only); and the line itself.

The Puffing Billy Steam Railway is an integral and essential element of the Dandenongs and a major attraction for domestic, interstate and international visitors, carrying more than 200 000 passengers a year.

Other features of the railway are a steam engine museum at Menzies Creek, the forest and rural scenery through which it passes, and the panoramic views southward. Remnant vegetation along the mainly narrow railway corridor is enhanced by adjoining areas of vegetation on both Crown and freehold land.

Recommendation

F4(v) That the recreational, tourist and educational values of the reserve be protected and enhanced

and that the area continue to be managed by the Emerald Tourist Railway Board.

Notes:

1. The proposed reserve includes both the area vested in the Emerald Tourist Railway Board and the area, from Emerald lake to Gembrook, over which it is Committee of Management.

(continued)

F4(v) (continued)

2. Management of the lands within the visual and scenic corridor of the railway in a manner sympathetic with the aims of the tourist railway would enhance its value.

3. A playground at the edge of the original Emerald station ground is not included in this reserve.

4. Part of the Gembrook station ground area is occupied by a Country Fire Authority station. This occupation should be permitted to continue.

F5 Collins Settlement Site, Sorrento
(0.04 ha)

The eastern point of The Sisters at Sorrento is part of the site of the first official attempt to establish European settlement in Victoria in 1803. While the settlement lasted only six months, it marked the end of the pre-contact period of Victoria's Aboriginal history. Except for four graves believed to originate at this time, little evidence remains of the settlement. Since 1977, a narrow strip of land abutting the foreshore has been purchased and reserved under the *National Parks Act* 1975. A monument, look-out, and visitor centre (a former dwelling) are on the site. This section of coastline is also of geomorphic significance and abuts two beaches used for boating and swimming.

Areas of State significance

F6 Seymour Court House (0.2 ha)

This brick, slate-roofed court house was built in 1863. It also incorporates a telegraph station, which operated from 1865. It is leased to the local municipality and presently used as an arts and craft centre.

F7 Alexandra Court House (0.1 ha)

An integrated complex at Alexandra combined the court house and the offices of the magistrate and warden, clerk of courts, Lands and Survey, and post and telegraph. It was built in two stages 1876/77 and 1884/85, and is of the Victorian - free classical style, with recessed entry, Florentine arched arcade, and hipped roof. It is substantially intact.

The court house is used by a continuing education program and as an arts centre. The post office section is no longer public land.

F8 Jamieson Court House (0.1 ha)

This gable-roofed brick court house was built in 1864 to serve the growing gold town and was extended in 1886. It features decorative brickwork detailing and has associated stables. It is largely intact except for part of its roofing and guttering.

It is presently used by several community groups and the Department of Conservation and Natural Resources, and is managed by the Historic Buildings Management Committee Inc.

F9 Comet Sawmill, Mount Disappointment
(40 ha)

The Comet Sawmill was erected in 1884 and, although burnt out in 1889 and again in 1899, was worked more or less continually until its closure in 1902. It was the largest sawmill in the district and allegedly the largest in Australia in 1894. The mill was linked to Wandong and the North-eastern Railway by a timber tramway, under the control of the Victorian Railway Commissioners.

Much of the mill's plant was removed when the mill closed, however foundations, house sites, garden edgings, two large sawdust heaps, and short sections of the tramway formation remain.

Note:

Much of the tramway route and some of the more recent saw mill sites associated with it lie within State forest outside the historic area (see Chapter E).

F10 Woods Point Gold Mines (450 ha)

This reserve is in two parts and includes a number of mines, workings and settlements associated with the first Victorian gold-mining phase.

F10(a) Sir John Franklin workings

Gold was first discovered here in 1861, and quartz mining persisted from 1864 to 1941. It supported a sizeable mining population for most of the later 19th Century. Early mining was to the west on Never Mind Spur, and later on Websters Spur.

Remains of open cuts, adits, air shafts, trenches, mullock heaps, machinery sites, water races, dams, tramways, a benched track, and extensive retaining walls are present in this

265 ha area, together with evidence of many house and building sites and associated deciduous trees. Of special interest are the innovations undertaken in response to the difficult mountainous site, including a long self-acting tramway.

F10(b) Standers Creek Mines

Reef gold was discovered here in 1865 and the Royal Standard mine was at one time working the richest reef in the Woods Point area. By the end of 1866 a substantial town had developed, but the reef could not be followed beyond a fault and was worked out by 1870. Other less successful mines were operated in the vicinity. No gold was produced after 1900.

In addition to a series of adits, shafts, and open cuts, many of which are still accessible, the 185 ha site has a dam, incline and self-acting tramway formation, house sites, remnants of rubble chimneys, platforms, walling, and machinery footings.

F11 Eltham Court House (0.1 ha)

Built in 1860, this is a substantially intact brick, slate-roofed building. It is presently managed by the Historic Buildings Management Committee Inc. Several community groups are interested in occupancy.

F11A Healesville Court House and lock-up (0.1 ha)

This court house was built in 1889/90. It is the most intact example of the Victorian-free classical style, with hipped gable roof and skillion verandah. The associated lock-up and stable were built in 1866.

The Department of Conservation and Natural Resources sought expressions of interest for the future use of this court house, and subsequently granted the Coranderrk Koori Co-operative an occupancy.

F12 Ada River Sawmills (330 ha)

Evidence of a number of mills here represents the pre-1939 peak of the Victorian timber industry. It is the best known concentration of former mountain ash milling and associated sites.

Commercial utilisation of the Upper Yarra forests followed the opening of the Warburton railway in 1902 and the construction (in 1913) of a high standard timber tramway between

Yarra Junction station and Powelltown, the site of the largest sawmill. The magnificent mountain ash forests of the Ada River were mostly inaccessible due to steep country until technology such as the winching of logs was developed, and until kiln seasoning and reconditioning processes were developed in the early 1920s. Two companies - the Ada River Company, with cutting rights over the western half of the area, and the Federal Timber Company (eastern half) - operated during the timber industry's era of greatest activity here.

The Ada No. 2 mill came into operation in 1928 after a tramline connection to Powelltown was opened up. The key link was the High Lead - a winch incline that brought the tramway over the steep divide between the LaTrobe and Ada valleys - completed in 1927. This mill was burnt out in the 1939 fires. The New Ada mill - built in 1931/32 - escaped the 1939 fires and closed in 1942 after a period of milling salvaged logs.

The New Federal Mill commenced operations in 1934. The Company constructed its own three foot gauge tramway above the Ada River, across Starlings Gap and thence to Easy Warburton via Big Pats Creek. The mill also sawed logs salvaged after the 1939 fires.

A large variety of artefacts remains - tramway formations and cuttings, 'make up' style bridges, the high lead winching house foundations, and traces of the New Ada Mill winching site.

Most of the main structure of the New Ada Mill survives, and at least ten associated buildings. At the New Federal Mill site, foundations, building materials, huts, and a dug-out are still evident.

Notes:

1. The older-aged forest in this reserve should be protected.
2. The reserve boundaries are set back 100 m from the tramways and minor mill sites and 200 m from the major mill sites.
3. Increased protection is required for *in situ* artefacts.
4. A forest road crosses the site. This should not be developed as a major access route.
5. Several associated historic features are located within the nearby forest. These have been included on the 'Schedule of Values to be Protected in State Forest' - see Chapter E.
6. Timber harvesting is limited in this area under existing prescriptions. The recommended reserve coincides in parts with

the (20 m wide) streamside buffer strips and the (100 m wide) buffer to the 'Walk into History'. These are exclusion zones in present forest management plans.

F13 Noojee Trestle Bridge (80 ha)

The major feature of this reserve is an impressive 18-span timber girder bridge, the highest example of this bridge type surviving in the State. It is also notable for being built in a curve. It was built in 1919 on the Warragul to Noojee Railway line, which operated until 1958. The bridge was reconstructed in 1939 and was restored again more recently. The reserve also includes the track alignment between the bridge and the settlement of Noojee, developed as a walking track.

F14 Kirchubel's Tramway and Mill, Tanjil Bren (65 ha)

These were constructed after the 1939 fires, and are substantially intact. The tramway is probably the best remaining example in the State.

The mill was set up to salvage fire-killed mountain ash trees before the timber decayed. Logs were transported to the mill on a wooden tramway, which was gradually lengthened, finally extending 1.5 km from the mill. An 'outlet' tramway ran for a kilometre between the mill and the Forests Commission's steel tramway to Tanjil Bren. The presence of this and nearby mills led to the establishment of that town. The tramway is noted for its array of 'crib log' style bridges, 15 in all, most of which are in good condition, the longest extending 73 m. Both wooden and steel rail sections remain. The mill site includes minor artefacts such as timber uprights and roofing, a boiler and stack, engine bearers, and a substantial sawdust heap.

The tramway also has potential for use as a walking track.

Notes:

1. The site is defined by a 100-metre setback from the tramway and mill site.
2. A recently bulldozed track near the mill should be rehabilitated.

F15 Toombon Gold Mines, Aberfeldy (375 ha)

Gold was first discovered at Toombon Creek in 1870 and an adit was built and battery installed by the end of 1872. It was the principal part of

the Aberfeldy/Donnellys Creek mining division. The mine operated successfully, and a township developed until the mine closed at the end of 1898. An attempt to re-open the mine in 1937 was unsuccessful. Other mines - the New Toombon Company and the New Dawn workings - operated briefly in the 1880s.

Evidence remains of the mine workings, building and machinery sites, tramways, tracks, mullock heaps, water races, dams, alluvial terrace workings, and of the Toombon settlement and cemetery.

Notes:

1. This area encompasses a number of allotments within the gazetted township of Toombon that were available for alienation in the late 1880s but for which freehold title is now uncertain. Council believes that those allotments that are not definitely freehold should be included in the recommended historic and cultural features reserve, and that development of the others, if any, should be in sympathy with the aim to create an environment reflecting the area's mining and associated activities.
2. It may be necessary to redirect public vehicular access around this reserve.

F16 Coopers Creek (170 ha)

This area contains the site of Victoria's first copper mine as well as the remains of a small settlement and lime works, both associated with the mine. Copper was discovered at Coopers Creek in 1864 and it provided the first copper smelted (by a blacksmith at Walhalla) in Victoria. The mine's most productive period was in the 1870s. It closed in 1880, operated again between 1910 and 1913, and from 1967 until 1971. Smelters were erected and operated here.

The mine site is on the eastern side of the Thomson River. The settlement is on the opposite side and they were connected by flying fox and a ford.

A limestone quarry and associated kilns were constructed in 1912 and connected to the smelter by a tramway. A more recent limeworks was established to the north at Platina and connected by a tramway to a siding on the Moe to Walhalla railway. It was mainly used to provide lime for the building industry, and operated until 1951.

In addition to the mine workings a variety of other relics remains. These include the

remains of the 1860s smelter, more recent ore heaps, tramway formations, a 24-metre steel girder tramway bridge, ore hopper, incline tramway, winch support, and levelled building sites. Remnants of the original lime works include ore bins, brick kilns, incline tramway, lime dump, and quarry. Machinery foundations, kilns, and the railway siding remain at Platina.

Only the former Copper Mine Hotel and clearings remain at the Coopers Creek settlement. The area is used for camping by a number of groups.

Note:
Several private allotments occur within the gazetted township of Coopers Creek. Council believes that any development within the township should be in sympathy with the object of creating an environment reflecting of the area's history of mining and associated activities.

F17 Mornington Court House (0.4 ha)

Built in 1860 this is a simple, five room brick dwelling that has been little modified. It has recently been declared as not being required for court house purposes. The Mornington historic society is interested in establishing a local history museum in the building.

F18 Coolart, Somers (85 ha)

Coolart is a historic farming property with a substantial homestead - built in 1895 by the Grimwade family - together with associated outbuildings, former dwellings dating from the 1860s, and elements of a formal garden. Several artificial pondages provide breeding roosts for a number of waterbirds and give the property important wildlife values. A theatre and interpretation centre, nature walks, and bird hides have been established.

The property is managed as a tourist destination with the joint objectives of enhancement and maintenance of wildlife habitat and restoration of the historic features.

Recommendation

F18(v) That waterbird habitat values be protected.

Note:
This property was acquired by the Government after the Council's 1977 recommendations.

F19 Kilcunda Coal Mine (9 ha)

This area is associated with one of the earliest coal mines in Victoria, and several *in situ* relics remain. It was operated by a private company in the early 1870s, probably concurrently with the Wonthaggi State Coal Mine. It was linked by a railway to the shipping port at San Remo.

Remnants of this coalfield include railway sidings, parts of the beach tramway system, machinery and building foundations, and mullock heaps. Some dwellings remaining here are thought to have been occupied by the keepers of the pit ponies. The field extended into the adjacent coastal reserve and an adit is visible from the shore.

Recommendation

F19(v) That grazing be permitted at the discretion of the land manager.

Note:
The status of the occupancy of the dwellings on the reserve require clarification.

F20 State Coal Mine, Wonthaggi (500 ha)

Wonthaggi developed in conjunction with the State Coal Mine. This underground black coal mine was operated by the government and produced coal for Victoria's steam trains. In the context of the role of railways at this time, the mine was an important factor in the development of Victoria. The coalfield and Wonthaggi were established in 1910; production peaked during the 1920s. The last mine was closed in 1968. In all, some 17 million tonnes of black coal were won from the 12 separate mines.

The Department of Conservation and Natural Resources is developing a comprehensive historic reserve to contain the artefacts of coal mining. Several separate but inter-related sites would each illustrate one or two components of mining operations. One of the parcels - the 'East Area' - has been reserved for this purpose. Former structures there have been restored and guided tours are conducted.

The following eight parcels of land - each with different but complementary values - were closely associated with coal mining in the area. These are indicated on Map C.

Recommendation

F20(v) That grazing be permitted where appropriate in the areas described below at the discretion of the land manager.

Note: These areas are indicated in detail on Map C.

F20(a) Number 20

This site contained all the surface buildings associated with Number 20 Shaft. The ventilation shaft is still evident. This was the location of Wonthaggi mine's worst disaster commemorated by a number of plaques.

Note:

This area is within an old and inappropriate subdivision and the exact ownership of allotments is unclear. Part of the shaft area is municipal freehold. Further investigation of tenure and boundaries is required.

F20(b) Western

The mine head of the 'West Area Workings', the sole remaining 'redstone' mullock heap (a conglomerate of sandstone and low quality coal) and relics of the 'endless haulage' conveyor belt to the railway head, are found here.

F20(c) Nos. 9 and 10 Shafts Area

Known locally as 'Orchards', the remaining artefacts here include building foundations, mine head footings, and evidence of the haulage line. A large wetland in portion of the area has been fenced and is regenerating.

F20(d) Number 5 Brace/Central Area

This site - the first major coal production area - developed as the central service area for the State Coal Mine. Artefacts here include the railway marshalling yards and turntable, engine sheds and workshops, weighbridge, sawmill, stores building, and the site offices of the mine. This area also includes the pit pony paddocks, the mine rescue station, the former entrance of the McBride Tunnel which provided access to four northern workings, the shell of the power house which generated electricity for the mine and the town, and the site of the State brickworks.

Notes:

1. The power house is presently leased.

2. Remnant natural vegetation should be protected.

3. The road through the area and the former residence of the horse handler are excluded from the reserve.

F20(e) East Area

This site contains the mine head of the East Area Tunnel which serviced the 'Number 1 Bench Area', the 'No 3 Bench Area', and the 'No 18 Shaft Area'. Various mine building foundations, mullock heaps, and machinery relics remain, and reconstructed buildings, a kiosk and picnic areas are used in conjunction with mine tours.

F20(f) Eastern incline ventilation shaft

This small area contains a ventilation shaft for the incline tunnel between the East Area coalfield and No 18.

F20(g) Wonthaggi station ground and railway line

This block includes the railway station - an unusual Queen Anne style building listed on the Government Buildings Register and presently housing a local museum - associated yards and part of the former Nyora to Wonthaggi Railway.

Part of the railway easement passes through the Wonthaggi township and provides a link between Central Area, the station grounds, East Area, Kilcunda and Anderson. Retaining a link between these areas along the railway easement would assist visitors to obtain a better understanding of the coal mining operation and its vital interaction with the railways, permit pedestrian access between some of the major parts of the proposed reserve network, and permit the option in the future for establishment of some form of tourist railway or other transport mode. It also includes some remnant native vegetation.

Notes:

1. The station area was declared surplus by the then State Transport Authority and transferred to the former Department of Conservation and Environment; the remainder of the original station ground has been or is to be sold.
2. The proposed reserve includes Apex Park, which provides an open space link between the station and one of the two main streets of the town.
3. Part of the former railway line link between the station ground and the East Area coalfield

is presently a Borough-managed open-space reserve (the 'Flincher Street Reserve').

4. Two minor sections have been alienated, while another 20 - m section is Crown land under leasehold with a right to freehold. Council believes that contiguous access should be maintained or provided.

5. The Department of Conservation and Natural Resources recently sought expressions of interest in the whole of this disused railway.

F20(h) Number 18

This was the site of a shaft at the far end of the East Area tunnels. It has potential for use for interpretation purposes, as it is readily accessible from the Inverloch Road.

F20(i) Kirrak

This was the last mine operating at Wonthaggi and the brace building and foundations of all other buildings remain.

Areas of regional and local significance

F21 Yea Station (7 ha)

Built in 1889 on the now disused Tallarook to Mansfield railway this is the most intact Victorian example of a small group of Gothic-styled station buildings.

F22 Cheviot Tunnel (5 ha)

This brick-lined 250 m tunnel on the disused Tallarook to Mansfield railway traverses the divide between the Yea and Goulburn River catchments. It has a wagon shaped cross-section, and bluestone dressing abutments.

F23 Alexandra station (2 ha)

Built in 1910, this station is in good condition. It is at the terminus of a spur line on the disused Tallarook to Mansfield railway, but was linked to a 20-km narrow gauge tramline built in 1912 to the Rubicon forests.

The station is used by a local historical society which has established a museum of sawmilling history, and runs restored timber-trains on a narrow-gauge tramway circuit.

Recommendation

F23(v) That the use of the site as a museum be permitted to continue.

F24 Woodfield trestle bridge (2 ha)

This 30-m long bridge on the disused Tallarook to Mansfield railway near the junction of the Woodfield to Ancona and Bonnie Doon to Merton Roads, is in good condition. It is constructed of timber girders supported on 5 trestles, the highest being almost 5 m.

F25 Yarra Glen trestle bridge (15 ha)

Crossing the Yarra River and adjoining floodplain on the now disused Lilydale to Healesville railway, in the 1890s this was the longest timber trestle bridge in Victoria, although parts have since been supported with earthen embankments. The longest remaining timber section extends some 500 m (see also Recommendation J20).

F26 Yarra Glen station (1 ha)

This building, also on the disused Lilydale to Healesville railway, represents the style used for a large group of stations (Gisborne group). Built in 1914, its large passenger waiting area reflects the substantial holiday traffic previously carried on this line (see also Recommendation J20).

F27 Healesville station complex (2 ha)

This station was built in 1902, at the terminus of the now disused Lilydale to Healesville railway. Rolling stock remains on retained sections of track and at sidings, and a goods shed, water tower, turntable, and engine shed remnants are also on the site. The station ground is leased by the Yarra Valley Tourist Railway group, which shares occupancy of the station building with a local community radio station (see also Recommendation J20).

F28 Yarra Junction station (0.5 ha)

Located on the now disused Lilydale to Warburton railway, this was a key station for the local timber industry. It linked with the Powelltown tramway and was at one time one of the busiest stations in the State. In addition to the station building (relocated from Lilydale), this site includes a goods shed and platform mound. The station houses a museum operated by the Upper Yarra Valley Historical Society (see also Recommendation J17).

F29 Berwick Cheese Factory (10 ha)

Originally part of a dairy farm, the Berwick cheese factory and associated homestead and gardens were built in 1865. It is one of few original cheese factories remaining in this part of Gippsland. The site has been well restored and consists of a two-storey factory, a brick homestead with adjoining kitchen, well, and surrounding gardens, and parts of the former farm paddocks. It is now used as an art and craft gallery.

Recommendation

F29(v) That the use of the site as an art and craft gallery be permitted to continue.

F30 Nyora station (7 ha)

Located on the disused Great Southern Railway, this site includes sheds, sidings, tracks, a functioning turntable, and a series of coaling stages as well as the station building. These are maintained by the Great Southern Rail Society.

F31 Coal Creek, Korumburra (16 ha)

This mine is one of the earliest (1890s) and largest of Victoria's few black coal mines. Artefacts remaining from the mining era include the main shaft, mullock heaps, railway sidings, machinery, and several buildings. While the reserve - developed as a folk museum - includes a number of new buildings, they are generally reconstructions of original ones or re-sited buildings similar to the original.

Recommendation

F31 (v) That the educational, recreational, and tourist values of the reserve be protected.

HISTORIC TRACKS

Development of transport routes was integral to European settlement of the region. Tracks were cut to facilitate land selection, provide access to mining fields, and to assist in tourist access (such as the Baw Baw track, cut in 1906), and tramways were developed to transport timber from the forests.

With development, evidence of many of these early routes has been obliterated. The alignments of some have been re-used, such as parts of McDonald's Track (cut in 1861 to assist with land selection) which are obliterated by the Moe to Thorpdale railway, and part of the Yarra Track to the Woods Point goldfields (formed in the early 1860s) which has been replaced by a road. Others have been upgraded to permit access for forest management or recreation (such as the Walhalla coach road). However, some in more remote areas remain in their original form. These may be overgrown or developed for recreation, such as the Jamieson River mining track and McMillan's Track of 1864 to the Woods Point goldfields.

As these early tracks and tramways were constructed for pedestrian, pack horse, or horse driven tram or wagon, they are generally on gentle gradients, following river valleys, major ridges and spurs, or are side-cuts. Consequently, they can have value for recreational access, as well as their historic and educational values.

Aboriginal people, prior to European settlement, also had defined access routes. Few details of the location of such routes have survived. The routes of early European explorers are also of interest and can often, from analysis of historical records, still be traced. The route taken by Hume and Hovell is proposed for investigation as a recreational track (see Chapter J - Community Use Areas).

Historic tracks

Recommendation

F32 That, wherever possible, evidence of early mining tracks and timber tramways, particularly the sections and features listed in Table 17 below, be protected and managed in a manner that reflects their historical, recreational, and educational values.

Table 17

HISTORIC TRACKS TO BE PROTECTED

McMillan's Track to the Woods Point goldfields 2
 Knockwood to Woods Point track
 Woods Point to Standers Creek track
 Yarra Track, especially:
 * the Paradise Plains route and settlement site
 * clearings associated with early hotels and guest houses
 Baw Baw track and associated approaches
 Big Pats Creek and Powelltown timber tramways (part of the 'Walk Into History')
 Reid's tramline at Powelltown
 Old mining tracks
 Minor timber tramways

MEMORIALS

Memorials to war and to the early European explorers are the most common types of memorial within the Melbourne Area, District 2. Most are on public land and are significant historical features both for what they represent and as artefacts in their own right.

War memorials in Australia are different from those in other countries, generally being

tributes to those who volunteered to go o war, while the commemorated dead were buried on the other side of the world. Given the general absence of public memorials in 1914 they became prominent landmarks. Those in Victoria commonly feature the soldier on a plinth design (for example at Yarra Junction) or are in the form of an avenue of trees. All are of at least, local significance and many, due to their unusual design or social history, or their present use, are of regional significance.

Explorers' memorials are a legacy of official attempts to commemorate the pioneers of settlement. Many arose from the work of the 'Victorian Historical Memorials Committee' (1910 to early 1930s). Simple stone cairns were erected where the paths of Matthew Flinders, George Bass, Hume and Hovell, and Count Strzelecki intersected a modern transport route. They represent the growth of popular interest in Australian history that followed federation and are of at least local and possibly regional significance. Another series of plaques was established during Victoria's sesqui-centenary.

Other notable public memorials include the Police Memorial at Mansfield, the Carlo Catani Memorial, the football team memorial at Mornington, and the gold memorial at Warrandyte. A comprehensive inventory is being prepared by the Royal Historical Society of Victoria.

Memorials

Recommendation

F33 That notable public memorials, especially those war memorials built after World War I and those forming part of the early 20th Century network of cairns commemorating European explorers' travels, be protected.

CEMETERIES AND ISOLATED GRAVES

Cemeteries

Most cemeteries were, and are, located on public land and officially gazetted by the government. They are of great social and cultural value, and are often also of architectural interest and, because of their past management, horticultural or botanical interest. All are of, at least, local historical significance and several are of regional or State significance.

Historically significant cemeteries should be protected. The closed Old Sorrento cemetery, believed to be associated with the first official European settlement of Victoria or with early pastoral settlement, has been recommended as a historic and cultural features reserve (Recommendation F35) and several others are on the schedule of Values to be Protected in State Forest (Chapter E).

Where in current use, cemeteries have been included within a services and utilities reserve (Chapter M) with reference to the need to protect those with high historic (or other) values.

Gazetted under the *Cemeteries Act 1958* is independent of reservation as a cemetery under the *Crown Land (Reserves) Act 1978* and, consequently, it is possible to include an active cemetery (such as at Walhalla) within a larger historic and cultural features reserve.

Isolated Graves

A number of isolated graves in the study area are generally those of early pioneers and miners who died in remote areas. Those known are generally marked by simple head stones.

Cemeteries

Recommendations

F34 That

- (i) wherever possible, historically significant cemeteries, and particular historical features of other cemeteries, be protected
- (ii) the Outtrim, Jericho, Red Jacket, and Toombon cemeteries be closed to further burials.

F35 That the Old Sorrento cemetery be used in accordance with the general recommendations for historic and cultural features reserves above

and that

- (v) where graves occur, they be recognised and any authentic associated artefacts be protected.

Note:

The Old Sorrento cemetery is closed for additional burials. The Outtrim cemetery is in the process of being closed (see Recommendation C12), and the Jericho, Red Jacket, and Toombon cemeteries have not been used for at least 50 years.

Isolated graves

Recommendation

F36 That where isolated graves occur on public land they be recognised and any authentic associated artefacts be protected.

ABORIGINAL CULTURAL ASSOCIATIONS

The Coranderrk Aboriginal Station at Healesville was established under the auspices of the Board for the Protection of Aborigines, and was one of a number throughout Victoria. It was unusual in that the site was chosen and named by the Aboriginal people. A temporary reserve was established in 1863. The Coranderrk community comprised Aborigines from the Woiwurung, Taungurong, and later the Bunurong, Wurundjeri, and other central Victorian groups. It was an important focus of

Aboriginal life until it was closed in 1923/24. Most of the reserve was subsequently sold other than the Coranderrk bushland area adjacent to the Healesville Wildlife Sanctuary (see Recommendations C43 and J23). The Commonwealth Government has agreed that the former Army School of Health land, also adjoining the Sanctuary, be given back to the traditional owners.

Council considers it is important that a method for appropriate recognition of these associations be developed.

Aboriginal associations

Recommendation

F37 That a method for appropriate recognition of the Aboriginal associations of the former Coranderrk Station area be developed.

G. NATURAL FEATURES RESERVES

Throughout the agricultural regions and urban fringes of the study area, many parcels of public land remain.

The areas listed below are those recommended for reservation because they have natural features worthy of protection. They include heritage rivers, public land along rivers and streams, scenic areas, geological or geomorphological features, and remnant bushland.

They have been identified from past recommendations, departmental records, recent aerial photography or field inspections.

While these areas are not recommended primarily for conservation of significant native species, they are important because (along with road reserves) they often provide the only suitable habitat for the many common and uncommon species that either still use, or were once widespread in, those land types that have been largely cleared. They also make various contributions to our well-being, when used for

recreation, relaxation, scenic landscape appreciation, education, and protection against land degradation. Accordingly, the Council considers that they should be securely reserved.

This chapter contains recommendations for river and stream frontages, streamside areas, natural and scenic features, geological and geomorphological sites, and bushland areas, and confirms earlier recommendations for heritage rivers. Former 'wildlife reserves', that are open for hunting and therefore not recommended as nature conservation reserves, would be included in this category, in accordance with the Council's new public land use categories. However none remains in the Melbourne Area, District 2.

In all natural features reserves the suppression of fires is the responsibility of the Department of Conservation and Natural Resources. Appropriate fire-prevention measures will be carried out where necessary as will the control of pest plants and animals.

NATURAL FEATURES RESERVES

Recommendations

G1,G2,G5-37,G39-280 That, according to the specific characteristics outlined below, these areas be used to:

- (i) protect natural features and values
- (ii) provide opportunities :
 - (a) for education and passive recreation such as picnicking, walking and, where relevant, angling
 - (b) on wetlands, where specified and subject to other relevant limitations, for hunting (see Note)
 - (c) for more intensive recreation where specified below
- (iii) conserve indigenous flora and fauna
- (iv) maintain scenic features and landscapes
- (v) provide protection for cultural heritage features and associations
- (vi) preserve features of geological or geomorphological interest

(continued)

and that they be permanently reserved under Section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources, except where otherwise specified.

Note:

Recommendation (ii)(b) concerning hunting applies in principle to any former 'wildlife reserves' that were in this category, however, none has been so recommended in the study area.

STREAMS AND FRONTAGES

Stream frontages, beds and banks

This classification comprises public land associated with streams flowing through areas that are broadly private land. This may consist of a narrow public land frontage (often 20 m wide) and the bed and banks, or only the bed and banks of the streams.

In 1881, Crown land consisting of the bed and a specified distance (20 to 60 m) from each bank of certain major watercourses was permanently reserved for public purposes. In many instances, the public land water frontage is discontinuous. Although some frontages were set aside in this way before 1881, it was common before that date to alienate land to the water's edge or the centre of the stream, although the beds and banks of watercourses are deemed to have remained public land under the *Water Act 1905*, and subsequent Acts.

Particularly where native vegetation has been retained, public frontages are integral to the visual character of rural landscapes. Their sinuous form and contrasting colour and texture compared with the surrounding cleared land make them a key visual element of high scenic value, which enhance the pleasure of many recreational activities, such as angling, picnicking, walking, or canoeing, especially in rural areas.

Intact frontages are valuable as wildlife habitat, and produce and maintain aquatic habitat values. Riparian vegetation provides nutrients from leaf litter, creates specific in-stream habitats from fallen limbs, and regulates water temperature by shading. They often contain the only remnants of native vegetation in areas that are now extensively cleared, forming important corridors for wildlife migration. They may also provide seed stocks for the restoration of degraded land. In addition, ground cover on a well-vegetated frontage reduces the erosive power of both falling rain

and overland flow, thereby reducing the potential for bank erosion and consequent reduction of water quality.

Not surprisingly, given the social and economic importance of watercourses and their banks over the last 40 000 years or more, features reflecting cultural events and associations occur there. Scarred trees from which Aborigines obtained bark to make canoes, and 19th Century bridges are two examples.

Vegetated frontages also provide many benefits for adjacent landowners, without the owner necessarily requiring direct use. Along rivers susceptible to bank erosion, a public land water frontage is a form of insurance - at least 20 m of public land must first erode before private land is under threat. In cleared areas the vegetated frontage acts as a windbreak that may reduce wind stress on stock and the loss of moisture from adjacent paddocks, maintaining production. In some areas vegetation along the frontage is important in lowering the local groundwater table, and in all cases is paramount in mitigating river-bank erosion.

As rivers wind across their floodplains, their courses are often subject to change as they create new channels and abandon their old ones. Consequently it is sometimes possible to find an abandoned channel and its strip of associated public land some distance from the present stream, which now has privately owned bed, banks and frontages, although the water in such watercourses is Crown controlled. This occurs for example on the Goulburn River breakaway near the Acheron River confluence.

In many cases, public frontages have been managed with adjoining farmland for many years. They are often not fenced, and it may not be obvious whether the land adjacent to a river is public or private.

The locations of public land water frontages are shown diagrammatically on Map A, and in detail on Parish plans, which are available to the public from the Central Plan Office of the Division of Survey and Mapping in the Department of Finance, and can also be inspected at the regional offices of the Department of Conservation and Natural Resources. If the land abutting a frontage has been alienated, the common boundary shown on Parish plans may consist of surveyed lines or of a series of unsurveyed broken lines, which in either case approximate the limits of the reserved land.

In general, if the frontage is defined as a fixed distance from the river bank and changes in the river course are considered 'imperceptible' rather than 'sudden', the public frontage moves with the river. If the frontage is defined by a surveyed boundary, then changes in the river course will lead to a change in frontage width. In some instances it may lead to the loss of the public frontage. In both cases the beds and banks remain as public land, provided the watercourse remains as the 'boundary' of the adjoining allotments.

In some places the frontage has been permanently reserved for public purposes under the *Land Act* 1958 and in others it is not formally reserved. The land usually comes under the administration of the Department of Conservation and Natural Resources. In all cases the Crown controls the water and specified persons have a right of use.

Public benefit was fundamental to the concept of reserving river frontages from sale, thus establishing public land water frontages. In the mid- 19th Century these were set aside to provide for the development of public utilities for the expanding river-boat trade. They were also an important means of access, particularly in mountainous areas, where the valley floor provided an easily followed path.

As land became more densely settled in the 1870s public frontages became important for the collection of domestic water supply, watering of stock, fishing and general recreation. They were also set aside and uses prescribed to maintain environmental values. For example, they were set aside along the Goulburn River to prevent denudation by tree-felling.

Today, frontages are important public assets, particularly those that are in good condition (or capable of being restored) with stable banks

and a good cover of native vegetation. They also form an important buffer in reducing the impact of adjacent land uses on the stream environment.

Private use of public frontages for agricultural purposes is widespread. This legally occurs through the issue of a licence. Illegal use was, however, not uncommon in the past, although a recent review of the occupation of Crown land, by the Department of Conservation and Natural Resources, suggests that only about 5% of frontages are now grazed without a licence. Among other things, the licensee is required to control pest plants and animals.

Licences have also been issued for the cultivation of limited areas of frontage reserve in the Melbourne Area, District 2. In principle, Council believes cultivation of riverside public land to be an inappropriate use. Cultivation is inconsistent with the maintenance or restoration of riparian and associated in-stream values, it increases the potential for bank instability, and restricts the use of the frontage for other purposes.

Consequently, Council has recommended that no additional riverside frontage reserves be licensed for cultivation. Council is not aware of the specific circumstances for each of the existing cultivated areas. Frontage reserves licensed for cultivation may, for example, no longer be adjacent to the river, as a result of changes in the river course. Consequently, it would be appropriate for the land managers to evaluate whether cultivation should continue when the licences are being considered for renewal.

Recreational use of licensed frontages is permitted. The *Land (Amendment) Act* 1983 provides for the public to 'enter and remain for recreational purposes' although camping is excluded from licensed frontages. Licensees are required to erect and maintain a suitable means of pedestrian access along the frontage or from other points of public access. The requirement for maintenance of pedestrian access has not been applied to the majority of existing licences, however. Council believes that in some situations - for example, along popular fishing streams - the provision of stiles would assist pedestrian access and would reduce damage to fences and avoid gates being left open. Public frontages that are unlicensed have no restriction on public access, although use of vehicles is controlled by the *Land Conservation (Vehicle Control) Act* 1973. They are, however, normally fenced off from

adjacent freehold land, through which the landholder has no obligation to provide access.

It is neither necessary nor appropriate that a large proportion of the frontage reserves in the study area be developed or promoted for widespread and intensive recreational use. Streamside areas (see below) may be used for picnicking, walking and angling, conservation of flora and fauna, and other purposes.

Similarly, recreational activities which can be carried out at many places along a river, such as picnicking and swimming, should be focussed at nodes in the public land water frontage reserves, if the demand is substantial. The choice, by the managers, of location and development of these nodes should consider: the recreational need for the site; the suitability of the site for recreational use and routine management (in terms of its capability, and its nature conservation and cultural heritage values); provision of readily identified public access to the river; and the adjacent private land use. It is also important that nodes chosen have the widest possible frontage. Bridge or ford crossing of rivers may often meet these requirements. The careful location and selective development of such nodes is likely to reduce the frustration experienced by riverside landowners, and visitors to rivers.

The recreational use of licensed and unlicensed public frontages can create problems for adjacent land occupiers and licensees, who often discourage public access because of an understandable fear of damage, intentional or otherwise, to property. Vandalism and littering are problems in many areas open to the public, and firm action by authorities with management responsibilities is often required. Control is obtained through the normal exercise of fire, litter, firearm, and other regulations, although it needs more effective policing, particularly during holiday periods and at weekends. Education of the public to understand the rural environment is perhaps the best solution in the long run.

Many recreational groups have developed 'codes of behaviour', for their members which encourage a higher standard of conduct than that required by regulation.

Although in the past managing authorities have allowed the clearing of vegetation and the cultivation of limited areas of frontage, the failure to effectively enforce legislation has resulted in the progressive illegal clearing of native vegetation from other public frontages.

This, combined with agricultural use involving both grazing and cultivation, has seen the incremental loss of many values and a reduced capability to provide for a variety of uses.

Regeneration of vegetation has not occurred in substantial areas. High, steep and collapsing banks are a hazard for grazing stock, they are unattractive for recreational purposes, they destroy valuable streamside vegetation and contribute to stream siltation which in turn degrades in-stream habitat. Across the State long sections of rivers and their frontages are now degraded and in need of management attention. The State of the Rivers Task Force report (1986) identified the principal cause of river degradation and damage to public frontages as unrestricted stock access to the river, and stock camping on the river bank. There are a number of solutions to this problem including the paving of stock watering points.

It is clear that resource, technical, social and administrative factors have led to the degradation of beds, banks and frontages. Many of these factors have now changed, or are changing, and the circumstances are now conducive to maintaining river and frontage values and restoring degraded areas.

The resource implications vary. Some - such as streamlining and co-ordinating administrative arrangements, or where a choice is available between environmentally damaging and environmentally benign approaches - may be cost-neutral; on the other hand some may have high associated costs.

The financial and labour costs of maintaining streams and their frontages (survey, fencing, pest plant and animal control, revegetation, in-stream works) or restoring the values of degraded frontages are high, and have been major factors in the absence of change to past approaches to river and frontage management. However, various programs now exist that are leading to improved management. For example, waterway authorities currently spend about \$3 million per annum (across the State) on erosion and revegetation programs, and the Department of Conservation and Natural Resources also provides grants for frontage works. These programs, however, only meet a portion of the total requirements.

In view of the high costs of these activities, Council believes that the introduction of a priority system for the identification, protection, and restoration of streams and their frontage sections would lead to a progressive

improvement in their condition. While a listing for action is needed in priority order, the condition of Victoria's streams, in particular their frontages, is such that in the long term many sections will need attention. The scale of the problem requires that priorities should be determined for action starting now but continuing over a 10- to 20-year time frame. Stable streams and well vegetated frontages would benefit in-stream and bank habitat, stock management and water quality, enhance scenic quality, protect cultural heritage sites, and increase property values on adjoining freehold land.

The stream and its frontage make an integrated unit. Unstable streams can lead to the loss of frontages irrespective of the quality of riparian vegetation. In many cases, however, good quality bank and frontage vegetation is all that is needed to ensure stream stability. The following guidelines for establishing priorities are considered appropriate.

Guidelines

Establishment of priority for management action should be based on the following (not in a particular order):

- * recommended Victorian heritage rivers (eg Yarra, Goulburn) with public land frontages where values are at risk (refer later in this chapter)
- * the presence of natural, cultural heritage or recreational values significant at local level or above, particularly where these values are at risk or where they are sensitive to change
- * areas in which special measures are necessary to protect domestic water supplies, buildings and other public utilities
- * areas that are currently unstable and require action - where appropriate - to prevent major bed or bank instability, including sections of river which have undergone sudden or major changes in their courses
- * degraded areas (It is recognised that the resources required to address highly degraded areas are large. In practice, it may be more cost effective to allocate resources to maintain the condition of other rivers to prevent them from becoming highly degraded.)

In accordance with these guidelines, high-priority areas should be identified and programs developed to maintain or restore the values associated with them. The protection and restoration of these values may involve a range of management options, depending on the proposed uses and the values to be protected. Options may involve, for example, fencing areas to protect flora or unstable banks from stock, control of excessive recreation use, or provision of paved areas for stock access to drinking water. Equivalent in-stream actions may also be required.

Frontage grazing licences currently provide that, at the direction of the Secretary for Conservation and Natural Resources, revegetation of licensed land and reclamation of eroded areas be carried out, and that stock be excluded from areas being revegetated or reclaimed.

Development and implementation of management priorities should occur in conjunction with community-based organisations, such as catchment co-ordination groups associated with river management authorities, and local government. This will also provide opportunities for identification and assessment of values and priorities at a local level. Council considers that involvement of local communities and interest groups, and a co-operative approach, are integral to the success of restoration and maintenance of degraded frontages, beds and banks. It is also important that the goals of any program and the priority of any works be clearly defined.

Council recognises that the successful restoration and maintenance of stream frontages, beds, and banks depends on the interest and support of adjacent land owners which will only be gained by a collaborative approach to the identification and resolution of problems.

There are many beneficiaries of restoration works and the ongoing management for pest plant and animal and erosion control. These include the adjacent land owner, those owning river bank land downstream and upstream, those using the water and the river downstream, visitors to the area and residents in general. This distribution of benefits should be recognised, and appropriate resources for restoration and maintenance should be provided by each of the different beneficiaries. In some areas in the past a landholder contribution has been provided in labour rather than cash.

For equity to be achieved it is appropriate that the licence fee should be set to reflect its true worth to a licensee, but that a rebate could be provided to the licensee according to restoration works or other management activities carried out from which the community at large gains benefit.

Accurate and accessible technical information on river frontage, bed and bank values is needed to enable them to be managed for their diversity of values. The 1990 'Environmental Guidelines for River Management Works' prepared for the Standing Committee on Rivers and Catchments, assists in this matter.

Given the complexity of values and uses of river frontages, beds and banks, it is important that administrative arrangements are clearly identified and co-ordinated. Particular attention should be given to defining the role of government agencies, particularly since the introduction of the *Water Act* 1989 and the inclusion of the former Department of Water Resources within the Department of Conservation and Natural Resources. It is important that decisions reflect the wide range of values of frontages, beds and banks, especially nature conservation values. In the past the natural ecological functions of a river system have tended to be ignored, restricting the range of opportunities available to present

and future generations. Those who are likely to be immediately affected by frontage, bed and bank management - whether as direct beneficiaries or not - should be consulted. They include the adjacent landowners, and relevant Landcare and other community groups with an interest in the values and uses of waterways.

The Council has made recommendations for public land water frontage reserves since the mid-1970s, and these are the basis of the following recommendations. However, while these previous recommendations recognise the values of public land water frontage reserves, they do not sufficiently emphasise the need to maintain these areas in good condition or the need for active restoration programs, nor encourage their use for their potential range of values, especially those associated with appropriate recreation activities. There is also a need to recognise that the values and uses of streams, their frontages and catchments are interrelated and should be managed in a co-ordinated way.

The recommendations, listed below, apply to public land water frontages across the Melbourne Area, District 2 and to streambeds and banks adjacent to public frontages or private land.

Stream frontages, beds and banks

Recommendations

- G1** Public land water frontages
- G2** Stream beds and banks

That areas of public land along rivers and streams, where not recommended otherwise for a specific use, be used in accordance with the general recommendations for natural features reserves above, and with approved Recommendations **E1** and **E2** of the Rivers and Streams Special Investigation 1991 (see Appendix V)

G3 That

- (i) the interrelated nature of the values and uses of river frontages, beds and banks be recognised in management planning and implementation
- (ii) initiatives be developed and implemented to remove economic, social, administrative and technical factors that lead to losses of river bed, bank, and frontage values, or to difficulties in achieving effective and co-ordinated restoration and maintenance programs
- (iii) programs for stream bed, bank and frontage stability be carried out in accordance with Recommendation **F9** of the Rivers and Streams Special Investigation 1991 (see Appendix V).

(continued)

Stream frontages, beds and banks (continued)

Notes:

- 1. Goulburn River: the frontage reserves here contain important remnants of floodplain riparian woodland and associated wetland plant communities; of State significance as representative examples, and for the botanical richness and diversity at some sites. Goulburn River wetlands are also of faunal significance. The management plan, as required under the *Heritage Rivers Act 1992*, should identify site-specific values and management needs (see also Recommendation G38).
- 2. Murrindindi River: relatively intact and representative riparian forests, grading into floodplain riparian woodland, occur along these frontage reserves. Bank erosion requires management attention.
- 3. Diamond Creek: a high diversity of mammals and birds has been recorded in this frontage reserve, including species such as the long-nosed bandicoot that is uncommon in fragmented landscapes.
- 4. Little Yarra River: sections of this reserve between Gilderoy and Gladysdale contain representative examples of swampy riparian forest, riparian thicket, swamp heathland and adjoining wet sclerophyll forest. These areas should be protected from fire and nutrient-laden runoff from surrounding land.
- 5. Big Pats Creek: tall, mixed age riparian forest containing mature manna gum occur on this reserve. Weed invasion requires management attention.
- 6. Monbulk Creek: the small areas of Crown land along Monbulk and Bellbird Creeks form part of a habitat corridor between the Sherbrooke Forest area and the Lysterfield Regional Park.
- 7. Tarwin River: the intact riparian forest and associated wet sclerophyll forest in this reserve is vulnerable to weed invasion (see also Bushland Area G102).

Helmeted honeyeater

The recovery plan for this species has been discussed in Chapter C - Nature Conservation

Reserves. The following recommendations apply to public land water frontages along other streams with suitable habitat for helmeted honeyeaters.

Helmeted honeyeater

Recommendation

G4 That, if an extant population of helmeted honeyeaters is located within the boundaries of a public land water frontage or other natural features reserve, or if parts of a reserve are nominated by the Recovery Team as a suitable release site, then the land-use category be reviewed with a view to ensuring that the preservation of the helmeted honeyeater is a primary objective of management of the reserve.

Note:

In such cases there may be a need to retain or enhance existing vegetation and to specifically exclude grazing or other conflicting land uses.

The following creeks have been identified as having suitable habitat for helmeted honeyeaters:

- * that part of the Woori Yallock Creek frontage between the existing Yellingbo Reserve and the Sassafras Creek Nature Conservation Reserve
- * that part of the Cockatoo Creek frontage between the Yellingbo Reserve and the Cockatoo Regional Park
- * those parts of Shepherd and McCrae Creek frontages not within the Kurth Kiln

Regional Park

- * Cardinia Creek frontages including Muddy and Stony Creeks
- * the upper reaches of the Bass River frontage
- * the upper reaches of the Powlett River frontage

STREAMSIDE AREAS

In some instances, small accessible blocks of public land adjoin streams but are not included in the public land water frontage.

These blocks have, where appropriate, been designated streamside areas. Some are currently reserved under section 4 of the *Crown Land (Reserves) Act 1978*; others are unreserved Crown land, although they may be licensed for grazing. Vegetation on these areas varies from open forests to open woodlands. Every effort should be made to conserve native trees on these reserves and to encourage regeneration or restoration where the vegetation has been modified.

Blocks of public land such as this have values for nature conservation and recreation. Where near roads, they allow public access to the

river or stream, especially where access along the public land water frontage is difficult. The land manager may provide facilities for activities such as camping on streamside reserves in areas where conflict with nature conservation or water production values is minimal.

Streamside areas are discrete public land parcels, separate and distinct from the linear public land water frontages described earlier in these recommendations. It is intended that public land water frontages adjacent to or within a streamside reserve be managed by the authority responsible for that reserve.

Streamside areas

Recommendations

G5-G37 That the following streamside areas be used in accordance with the general recommendations for natural features reserves above

and to

- (vii) provide opportunities for camping at the discretion of the land manager if this does not conflict with the maintenance of the water quality of the adjacent stream
- (viii) provide a buffer zone for protection of water quality
- (ix) maintain the character and quality of the local landscape
- (x) provide grazing, at the discretion of the land manager, if this use does not conflict with the maintenance of the water quality of the adjacent stream or with (ii), (iii), (v), (vi), (vii), and (viii) above.

Table 18

STREAMSIDE AREAS

Recommendation	Parish (P) or Township (T)	Description	Area (ha)	Notes
Existing streamside areas				
G 5	P WINDHAM	CA 10B,10C,10E	13.67	
G 6	P KILLINGWORTH	CA 70B,70C,72C	40.14	
G 7	T YARCK	CA 30B,30C,SEC B	2.70	
G 8	P YEA	CA 216C	2.51	
G 9	P YEA	CA 61B	13.55	
G 10	T TOOLANGI	CA 18A	1.20	
G 11	P GRACEDALE	CA 32A,32B SEC 1	6.00	
Note: The diverse floodplain vegetation communities and the stand of <i>Eucalyptus camphora</i> should be protected.				
G 12	P GRUYERE	CA 14C	1.10	
G 13	P BUNYIP	CA C	5.67	
G 14	P BITTERN	CA 83C,83D,83E	1.24	
Note: It is proposed that the existing streamside area be extended to the coastal reserve by addition of the adjoining public land water frontage.				
Proposed streamside areas				
G 15	T SEYMOUR	CA 6B SEC L	1.00	New Crossing streamside area, Goulburn River
G 16	P TARCOMBE	WICKET HILL RD	18.54	Hughes Creek
G 17	T GOBUR	CA 4 SEC 11; CA 11,12 SEC 15; CA 10,14,15 SEC 22	5.10	Godfrey Creek, Gobur

(continued)

Table 18 (continued)

Recommendation	Parish (P) or Township (T)	Description	Area (ha)	Notes
<i>Proposed streamside areas (continued)</i>				
G 18	P TRAAWOOL	FALLS CK RES	1.86	
G 19	P KILLINGWORTH	CA 38B	7.78	Killingworth Road, Goulburn River
G 20	P WOODBOURNE	PART CA 19A NO SEC	12.00	Kalatha Creek
G 21	T TAGGERTY	CA 4 SEC 11	0.41	Acheron River, Township of Taggerty
G 22	T GRANTON	CA 3 4 SEC M	1.34	Acheron River, Granton
G 23	T HEALESVILLE	CA 1 SEC O	0.63	Watts River, Healesville
G 24	P WOORI YALLOCK	CA 9D	12.00	Lone Star Creek, Yellingbo
G 25	P YUONGA	CA 14E	5.52	Dee River, Millgrove
G 26	P NARREE WORRAN	CA 27A,27B SEC C	0.06	Monbulk Creek, Belgrave Heights
G 27	P PAKENHAM	CA 70A 71A	11.54	Cardinia Creek, Guys Hill
Notes:				
1. This reserve and adjoining frontage have high nature conservation values.				
2. Council is aware of proposals for a regional park to include this area.				
G 28	P BUNYIP	ADJ CA 92A	37.89	Cannibal Creek, Longwarry North
G 29	P DROUIN WEST	CA D,E	3.30	Picnic Point Reserve, Tarago River
G 30	P DROUIN WEST;	CA 18C (DW); CA51A,51B	0.81	Tarago River, Robin Hood
	P JINDIVICK	PART CA 51C (J)		
G 31	P NEERIM	CA 31A	30.40	Tarago River, Neerim South
G 32	P TANJIL	CA 29A	0.50	Tanjil River
G 33	P POOWONG	PART CA 34M	2.40	Lang Lang River, Topiram
G 34	P MOE	CA 125A	0.40	Narracan Falls reserve
G 36	T BASS	CA 6,7,8,9,10,16 SEC 7	12.70	Bass River, Bass
G 37	T KORUMBURRA	CA 12 SEC S	10.69	Ritchie Park, Coal Creek, Korumburra

HERITAGE RIVERS

Arising from Council's final recommendations in 1991 following the Special Investigation of Rivers and Streams, sections of several rivers in the Melbourne Area District 2 have been afforded Heritage River status and have since been scheduled under the *Heritage Rivers Act* 1992. These are the Howqua, Big, Thomson and Aberfeldy Rivers within the Central Highlands as well as the Goulburn and Yarra Rivers.

The recommendation below confirms the Council's earlier recommendations for these

heritage rivers, amended, where relevant, by the *Heritage Rivers Act* 1992. They are included in this natural features reserves chapter as there are broad similarities between the general recommendations above and the heritage rivers recommendations, in terms of the principles to be applied to their uses and management. Particular sites along these rivers have highly significant values and these are to be protected under the management plans to be prepared under the *Heritage Rivers Act* 1992. These areas are not reserves as such. The Act provides protection for their values as an overlay. The underlying tenure is unchanged.

Heritage Rivers

Recommendation

G38 That

- (i) the heritage river areas along the Goulburn, Yarra, Thomson, Big, and Howqua Rivers be used in accordance with
 - (a) approved recommendations A1-A17, A3, A4, A5, A13 and A14 of the Rivers and Streams Special Investigation (see Appendix VI)
- and
- (b) the provisions of the *Heritage Rivers Act* 1992
- (ii) the heritage river area along the Aberfeldy River be used in accordance with the provisions of the *Heritage Rivers Act* 1992.

Goulburn River

The heritage river corridor extends downstream from Lake Eildon to beyond the study area boundary near Seymour. While much of the adjoining land has been modified, the public land along this section of the River retains a range of significant values, as follows:

- * a diverse assemblage of native fish species
- * Macquarie perch habitat
- * recreational fishing - especially for trout from Eildon to Yea River
- * canoe-touring opportunities, from Eildon to Goulburn Weir
- * cultural heritage sites, particularly the Seymour rail bridge
- * significant scenic landscapes, from Molesworth to near Seymour
- * floodplain wetlands between Eildon and Meringo

Yarra River

From Warburton to Warrandyte, the heritage river corridor takes in the River and its adjacent public land frontages, and displays the following important values:

- * significant scenic landscapes from Yarra Glen to Warrandyte
- * botanical values - Buxton gum and tussock grassland near Spadoni's Reserve (see Recommendation C24); mountain swamp gum and manna gum riparian woodland at Everard Park (see Recommendation G11); box-stringybark woodlands from Yering Gorge to Warrandyte
- * zoological values - important (although incomplete) wildlife corridor for its full length
- * white-water canoeing opportunities from Homestead Road to Jumping Creek Reserve
- * river blackfish and Macquarie perch habitat
- * highly valued for trout fishing
- * geological/geomorphological sites of significance, particularly an abandoned high-level meander at Watsons Creek and a gravel terrace at Crooked Creek.

Other matters concerning the Yarra River are referred to elsewhere - the Parks and Waterways program in the Introduction, and possible additional water use by Melbourne Water in Chapter D - Water Production.

Thomson River

The Thomson Dam and Cowwarr Weir (outside the study area) mark the limits of the heritage river corridor, which has these significant values:

- * white-water canoe-touring along the whole reach
- * significant scenic landscapes for the whole corridor
- * cultural heritage sites - Brunton's and Poverty Point Bridges, Chinese Tunnel, Coopers Creek Area
- * fishing opportunities, especially for freshwater blackfish
- * the 'vulnerable' Australian grayling

Big River

Above Lake Eildon, the Big Heritage River corridor extends to the junction of Spring and Oaks Creeks, and has significant values as follows:

- * habitat for the endangered spotted tree frog (see Chapter C)
- * significant scenic landscapes from Oaks Creek to Lake Eildon
- * recreational fishing opportunities - especially for trout
- * white-water canoeing in a semi-remote setting from Frenchman Creek to Jamieson Road Bridge

Howqua River

From the study area boundary to Lake Eildon, this part of the heritage river corridor has the following important values:

- * fishing opportunities - especially for trout
- * Devonian fish fossil beds
- * habitat for the spotted tree frog

Aberfeldy River

The heritage river corridor lies entirely within the Baw Baw National Park. The Aberfeldy River is used for trout fishing and is popular with car-based campers, and there is access in this reach which also allows for a canoe-touring experience downstream from the Walhalla Road bridge. The same reach also displays the geologically notable Norton Gully sandstone.

RIVER ZONES

Streams and their frontages that are surrounded by freehold land were dealt with earlier in this chapter. Within State forest, however, streams remain part of the State forest category. In

Chapter E - Timber Production and State Forest, sections of eight rivers are recommended as river zones within State forest. These are to be managed as for the 'natural features zones' along rivers, identified in several earlier Council investigations.

NATURAL AND SCENIC FEATURES

These reserves set aside land containing prominent peaks, scenic features, lookouts, geological formations, or other natural features that warrant special protection. The maintenance of these features, their native vegetation and the character and quality of the landscape, are the main aims of management.

Levels of permitted activities such as recreation and grazing may need close control in some areas where protection of features such as significant plants may require special measures. Any road construction would be minimal and carefully planned in each reserve. Logging is not permitted.

Natural and Scenic Features

Recommendations

G39-G50 That the following areas with natural and scenic features be used in accordance with the general recommendations for natural features reserves above

and that

- (vii) the Department of Conservation and Natural Resources incorporate plans for the conservation of wildlife into the management plans, where appropriate
- (viii) apiculture be permitted
- (ix) any new roading be constructed only where essential for management and protection purposes and be designed to minimise effects on scenic and nature conservation values or significant exposures of geological features

Existing natural and scenic features reserves

G39 Pulpit Rock (3.3 ha) CA40B Parish of Traawool

G40 The Paps (208 ha) CA2 Parish of Doolam

G41 Mount Useful (220 ha) Parish of Binnuc

A total area of 500 ha surrounding Mount Useful was recommended by Council in the Final Recommendations for the Alpine Area in 1979, part of which is located within the Melbourne Area. This reserve falls within a site of State botanical significance for its cool temperate rainforest. Management of this reserve should take account of the need to protect this community.

G42 Westbury (3 ha) CA15B Section F Parish of Yarragon

Proposed natural and scenic features reserves

G43 Murrindindi River (760 ha approx) Parish of Glendale

The lower tract of the Murrindindi River is exceptionally popular for camping and picnicking, and includes the Wilhelmina Falls and Murrindindi Cascades. Several walking tracks traverse the reserve. Management of this reserve should seek to protect the unusual variety of native plants on the rocky outcrops near Wilhelmina Falls.

G44 Mount Torbreck (480 ha) Parish of Banyarmbite

This area includes Mount Torbreck with its sub-alpine woodland of snow gum as well as a fringe at least 40 m wide of the surrounding montane damp forest (alpine

ash). It extends north-west to include Barnswall Plains and an adjoining peak on the Torbreck Range. In season, this area provides for cross-country skiing. It is also a popular bush-walking venue.

G45 Mount Terrible (100 ha) Parish of Kevington

The high ridge at Mount Terrible overlooks the valleys of the Goulburn and Big Rivers. The reserve comprises the sub-alpine woodland of snow gum on the top of the ridge and a fringe about 40 m wide of the surrounding montane damp forest (alpine ash). The site includes a fire lookout.

G46 Steavenson's Falls (180 ha) Parish of Steavenson

This reserve contains part of the ferny Steavenson Valley; the scenic waterfalls, and the steep, forested slopes up to the Oxlee and De La Rue lookouts on Keppel track, also included

Note: The area used for water supply should be protected.

G47 Malleson Lookout (1.5 ha) CA7K Section C Parish of Gracedale

From this site on the Donna Buang Road there are views across the central Yarra Valley.

G48 Ben Cairn (49 ha) Parish of Yuonga

Ben Cairn is at the edge of the Acheron

plateau, and consists of Devonian volcanic rock (rhyodacite) which outcrops at the summit. Its slopes carry shining gum montane forests and silver wattle on rocky outcrops. It is a prominent peak (1040 m ASL) offering views across the Yarra and tributary valleys. The popular Donna Buang Road provides ready access to a car park, from where a short walking track climbs to a lookout at the summit.

G49 Seven Acre Rock (47 ha) Parish of Tonimbuk East

Magnificent views over the Upper Bunyip catchment forests, Western Port and Port Phillip Bays are obtained from this site, accessible via a short walk from the Bunyip Road.

G50 Labertouche Cave (23 ha) Part CA111G Parish of Jindivick

This consists of a 200 m long cave under granite boulders in the valley of Labertouche Creek.

Note: The adjacent area used for water supply should be protected

Geological and geomorphological features

These areas contain features of geological interest, and are reserved primarily to preserve these features for the public's education and enjoyment. Such areas often have recreation, nature conservation, scenic, and landscape values in addition to geological features.

Geological and geomorphological feature

Recommendation

G51 That the following site be used in accordance with general recommendations (i) and (vi) for natural features reserves above

that

(vii) educational and scientific study be permitted where it is compatible with (i) and (vi) above, and in ways that minimally affect the area

(viii) that recreational access be permitted where this is consistent with protection of the geological and geomorphological values.

G51 Fossil Beach (15 ha) Parish of Moorooduc

Fossil Beach is a site of State geological/geomorphological significance,

being the type-locality of a major subdivision of the Tertiary in Australia - the Balcombian Stage. It is also the type locality of other formations (the Marina

Cove Sand and Balcombe Clay), and contains the best exposure of the contact surface of the Baxter Sandstone. In addition it is a major fossil site and continues to yield important material. The outcrops are sensitive to disturbance however, and have been affected by general recreational use and the construction of coastal and cliff

stabilisation works. Although the area is used for recreation (swimming and fishing) these are not major activities.

Note:

Given the significance and sensitivity of this site Council believes that management should not be delegated.

BUSHLAND AREAS

Numerous small parcels of public land away from the Central Highlands forests carry remnants of native vegetation. This vegetation, particularly the ground flora, has often been modified from the original by grazing and invasion by weeds. The native tree species, and to varying extents the understorey remain, and these areas provide landscape diversity and some animal habitat, particularly in the more substantially cleared areas.

Council recommends that many of these small remnants of the native vegetation should be recognised as bushland areas. Their major uses are to maintain the distinctive Australian character of the countryside and to provide diversity in the landscape. When accessible, they may also provide some opportunities for passive recreation in relatively natural surroundings, but it is not intended that they be developed for recreation. For some, the only access is via an unused road covered by an unused-road licence, which should continue subject to the approval of the land manager. These bushland areas are generally too small to have major significance for fauna conservation,

although some may be important for migratory birds.

Management should aim at the maintenance of the native flora, particularly the tree species. Limited gravel extraction, low-intensity grazing (where appropriate), and the cutting of small amounts of firewood and an occasional post and pole are not necessarily incompatible with this primary aim, provided they are carefully planned and controlled and do not spoil the appearance of the reserves, particularly as viewed from roads, railway lines, and lookout points. These uses may not be appropriate to all reserves. In some instances the land manager may have to exclude them, at least temporarily, in order to permit regeneration of tree species.

Recognising the extent of historical and indeed recent land clearing in the study area, the Council has adopted a policy of protecting all isolated public land areas with remnant vegetation, by recommending them as bushland areas, if not in another category.

Bushland areas

Recommendations

G52-280 That the following areas of bushland be used in accordance with the general recommendations for natural features reserves above

and

(vii) to maintain the character and quality of the local landscape

(viii) to protect remnant areas of indigenous vegetation and areas with habitat value that

(ix) apiculture be permitted

(x) controlled grazing be permitted except where specified, and subject to

(a) the approval of the land manager

and

(b) an evaluation of whether grazing is appropriate in each case

Table 19
BUSHLAND AREAS

Recommendation	Parish (P) or Township (T)	Description	Area (ha)
Existing bushland areas			
G 52	P BROADFORD; KERRISDALE	CA 131A,131B,132C,132D (B); CA 10B SEC D (K)	230.00
	Note: Management should aim at protecting the riparian forest and floodplain riparian woodland communities in particular.		
G 53	P DROPMORE	CA 5 SEC B	35.00
	Note: The area south of the road is now proposed as land not required for public purposes. A suitable land exchange could be considered (see Recommendation O1)		
G 54	P DROPMORE	CA 12 SEC E	125.10
G 55	P MOLESWORTH	CA 41A SEC 1	124.10
G 56	P GOBUR	CA 10C SEC B1	1.20
G 57	P ALEXANDRA	CA 66P	2.51
G 58	P ALEXANDRA	CA 19Q,19H,19J	29.61
G 59	P MAINTONGOON	CA 11 SEC A	21.62
G 60	P LOYOLA	CA 82B	22.00
G 61	P LOYOLA	CA 85	58.48
G 62	P DELATITE; LOYOLA	CA 26 (D); CA 150B (L)	164.00
G 63	P YEA	EAST OF CA 91	7.00
G 64	T QUEENSTOWN	CA 3,4 SEC 4A	10.40
G 65	T QUEENSTOWN	CA 1A SEC 6, CA 2A,4A SEC 7	25.00
G 66	T QUEENSTOWN	CA 5 SEC 9; CA 18 SEC 10	21.00
G 67	T TOOLANGI	CA 42,43, 28A	33.80
G 69	P SUTTON	CA 48,48A,48C,48D,48F	68.35
	Notes: This area adjoins the Yering Gorge pump station. It has good representation of dry sclerophyll forest, which should be protected.		
G 70	P TARRAWARRA	CA 19B,19C,19D	8.45
G 71	P GRUYERE; TARRAWARRA	CA 123A (G); CA 10A,12A NO SEC (T)	5.60
	Note: The diverse floodplain vegetation communities should be protected.		
G 72	P MOOROOLBARK	CA 33A,33B	9.53
	Note: This reserve includes the adjoining unused road reserve.		
G 73	T WANDIN YALLOCK	CA 18A	4.05
G 74	P WANDIN YALLOCK	CA 100A	3.15
G 75	P GEMBROOK	CA 13C,21 SEC D	7.80
G 76	P GEMBROOK	CA 115A	20.60
G 77	P GEMBROOK	CA 24A,24B NO SEC	11.14
G 78	P GEMBROOK	CA 16B SEC B	3.98
G 79	P NAYOOK	CA 36B,36C	7.80
	Note: This reserve was established as a result of the efforts of the local community		
G 80	P PAKENHAM	CA 149A,149B	11.30
G 81	P PAKENHAM	CA 200A	2.01
G 82	P NAR-NAR-GOON	CA 19M,19N	3.58
G 83	P NAR-NAR-GOON	CA 132H	3.33
G 84	P NAR-NAR-GOON	CA 132L,132M	7.88
G 85	P LANGWARRIN	CA 32A	2.02
G 86	P KOO-WEE-RUP EAST	CA 49 SEC U	0.82
G 87	P JINDIVICK	CA 122G	30.00
	Note: This area should be managed to protect its important faunal values.		
G 88	P JINDIVICK	CA 87D,87E	3.58
G 89	P DROUIN WEST	CA 64B,66A,146A&B,147B	7.40
G 90	P DROUIN WEST	CA 50D	2.68
G 91	P DROUIN WEST	CA 72B,72C,72D	14.10
G 92	P DROUIN WEST	CA 130A,130B,130C	1.57
G 93	P NEERIM EAST	CA 33B	22.00
G 94	P MOONDARRA	ADJ CA 3 NO SEC	35.00
G 95	P TANJIL EAST	CA 7H	28.30

(continued)

Table 19 (continued)

Recommendation	Parish (P) or Township (T)	Description	Area (ha)
Existing bushland areas (continued)			
G 96	P TANJIL EAST	PT CA 7G SEC C	14.00
	Note: This land may be required for coal-related development in the future.		
G 97	P MOOROODUC	CA 30B	0.50
G 98	P MOOROODUC	CA B2	6.02
G 99	P BITTERN	CA 34D	5.62
G 100	P LANG LANG	CA 78J	11.01
	Note: It is proposed that land with native vegetation in the adjoining recreation reserve be included.		
G 101	P YANNATHAN	CA 60D	10.12
G 102	P ALLAMBEE EAST	CA 14B,14F,14H,14D	2.14
	Note: The riparian forest and associated wet sclerophyll forest should be protected.		
G 103	P WARRAGUL	CA 117H,117J; CL ADJ CA 117C	7.30
G 104	T TRAFALGAR	CA 11 SEC 14	5.85
G 105	P KANGERONG	CA 10A SEC 19	4.43
G 106	P BALNARRING	CA B3 SEC 78	4.05
	Note: There is a need to rationalise the track network.		
G 107	P BALNARRING	CA 31A	6.68
G 108	P BALNAARING	CA 66H,66J	2.65
G 109	P CORINELLA	CA 212F,31A	6.40
G 110	T GRANTVILLE	CA 9 SEC C	27.38
G 111	P KONGWAK	CA 25S,25W,25T	14.80
Proposed bushland areas			
G 112	T TALLAROOK	CA 2 SEC 1	0.20
G 113	T TALLAROOK	CA 10 SEC 9; CA 1,1A,2 SEC 10	25.10
G 114	T SEYMOUR	CA 6A SEC L	1.84
G 115	P TALLAROOK	CA 89C SEC 1	2.51
G 116	P AVENEL	CA 8A,8B SEC 18A	3.64
G 117	P MANGALORE	CA 22A SEC B	13.17
G 118	P AVENEL	CA 14A SEC 18A	3.68
G 119	P TARCOMBE	CA 43B SEC 1	11.79
G 120	P TARCOMBE	CA 45A SEC 1	0.30
G 121	P TARCOMBE	CL WEST OF CA 24 SEC 1	15.00
G 122	P TARCOMBE	CA 2E SEC 3	5.90
G 123	P KOBAYBOYN	CA 7E SEC C	1.25
G 124	P DROPMORE	CA 8B SEC A	3.76
G 125	P GOBUR	CA 40A	12.67
G 126	P MERTON	CA 80F	10.00
G 127	P MERTON	CA 6F	1.51
G 128	P LOYOLA	CA 132D	2.00
G 129	P LOYOLA	CA 76C,76D	12.63
	Note: At the discretion of the land manager, the existing licensed use for a pistol club may continue.		
G 130	P BROADFORD	CA 135E	0.56
G 131	P BROADFORD	CA 190C	0.50
G 132	T REEDY CREEK	CA 7A SEC 7	0.59
G 133	P KERRISDALE	CA 10A SEC C	9.23
G 134	P CLONBINANE	CA 14A SEC A	1.76
G 135	P CLONBINANE	CA 33H,33J	12.67
G 136	P FLOWERDALE	CA 34A NO SEC	3.01
G 137	P FLOWERDALE	CA 22F NO SEC	1.76
G 138	P YEA	CA 40D	0.25
G 139	P YEA	CA 258A	6.27
G 140	P YEA	ADJ CA 213,217H	22.00
G 141	P YEA	CA 215M3	14.80
G 142	P YEA	CA 90F	4.27
G 143	P GHIN GHIN	CL WEST OF CA 18A	1.05
G 144	T GHIN GHIN	ALL C L IN SECS 5,6,7,8	2.02

(continued)

Table 19 (continued)

Recommendation	Parish (P) or Township (T)	Description	Area (ha)
<i>Proposed bushland areas (continued)</i>			
G 145	P WHANREGARWEN Note: This area could provide a camp site on the suggested Hume and Hovell Trail [see Recommendation J16(v)]	CA 75A,75B,75C	6.30
G 146	T YEA	CA 4,5 SEC 29	15.90
G 147	T ALEXANDRA	CA 17A SEC 67	0.19
G 148	P ALEXANDRA	CA 30L	0.75
G 149	P MAINTONGOON	ADJ CA 29A SEC B	9.03
G 150	P EILDON	CA 57 SEC B	117.48
G 151	P HOWQUA	CA 52B	2.34
G 152	P HOWQUA	CA 67,67A	4.26
G 153	P HOWQUA	CA 109D	2.01
G 154	T JAMIESON	CA 3,4 SEC 27; CA 2 SEC 23	1.69
G 155	T PHEASANT CREEK	CA 10,11,12 SEC B	1.23
G 156	P KINGLAKE	CA 21D	1.42
G 157	T KINGLAKE EAST	CA 25-32,33,35,36	8.35
G 158	P KINGLAKE	CA 38B	0.10
G 159	P KINGLAKE	CA 75C	1.00
G 161	T MARYSVILLE	CA 10A SEC F	9.15
G 162	P NILLUMBIK	ADJ CA 13A	1.75
G 163	T DIAMOND CREEK	ADJ CA 1 SEC 1	0.05
G 164	P NILLUMBIK	CA 8A SEC XXI	0.70
G 165	T ELTHAM	CA 1B SEC 15	0.60
G 166	P NILLUMBIK	CA 1C SEC 4	1.00
G 167	P NILLUMBIK	CA 1A SEC 8A	1.68
G 168	P GREENSBOROUGH	CA 100,101,102 SEC E	4.86
G 169	P NILLUMBIK	ADJ CA 8A SEC 2	0.40
G 170	P NILLUMBIK	ADJ CA 2 SEC 2	0.81
G 171	T PANTON HILL	CA 37,42A,48	2.50
G 172	T PANTON HILL	CA 21,22	0.81
G 173	P GREENSBOROUGH	CA 94A,67A,30C SEC D	4.01
G 174	P QUEENSTOWN	CA 8 SEC E	1.02
G 175	P GREENSBOROUGH	CA 51A SEC C	0.70
G 176	P QUEENSTOWN	CA 5 SEC F	4.71
G 177	T SMITHS GULLY	CA 50A	0.46
G 178	P SUTTON	CA 75C	0.50
G 179	P GREENSBOROUGH	CA 72B SEC C	0.50
G 180	P SUTTON	CA 46C	1.00
G 181	P BURGOYNE	CA 49B	4.01
G 182	P YERING	CA B2 SEC 4	116.55
Note: While modified, this area (Spadoni's Paddock) has high potential for eventual restoration of the Eucalyptus viminalis - E. ovata riparian woodlands of the Yarra floodplain. The adjoining Spadoni's Reserve has fragmentary remnants of floodplain woodland and floodplain wetland vegetation. Council considers that, in Spadoni's Paddock, existing legal use may continue, but that the area be progressively revegetated. The revegetation proposal excludes the area occupied by the gun club.			
G 183	P TARRAWARRA	CA 29B NO SEC	0.40
G 184	P TARRAWARRA	CA 2A SEC A	2.30
G 185	P GRACEDALE	CA 118B	2.85
Note: This area should continue to be managed by the Zoological Board of Victoria.			
G 186	P GRACEDALE	CA 69A	1.87
G 187	P GRACEDALE	ADJ CA 54A	1.50
G 188	T Warburton	CA 110,110D,111,112,112A,114,119,119A,120; CA 7 SEC A	48.40
G 189	P Warburton	CA 20B	11.79
G 190	P Monbulk	CA 5A SEC F	0.31

(continued)

Table 19 (continued)

Recommendation	Parish (P) or Township (T)	Description	Area (ha)
<i>Proposed bushland areas (continued)</i>			
G 191	P MONBULK	CA 4A,4B,7A SEC G	7.97
G 192	P MONBULK	CA 10A SEC E	2.93
G 193	P MONBULK	CA 10,10A SEC D	4.89
G 194	T OLINDA	CA 12 SEC A	0.78
Note: Part of this area is used as a car park for the adjoining National Rhododendron Gardens. Council is aware that an alternative site for the car park is being considered.			
G 195	P MONBULK	CA 22A	0.40
G 196	P MONBULK	CA 67A,95A SEC A	1.51
Note: The understorey requires restoration.			
G 197	T WANDIN YALLOCK	CA 8,8A,8B	0.85
G 198	P MONBULK	CA 14B SEC H	4.77
G 199	P MONBULK	CA 52B SEC C	5.58
G 200	P MONBULK	PART CA 4 SEC C	0.72
G 201	P NARREE WORRAN	ADJ CA 33 SEC B	0.80
G 202	P NARREE WORRAN	CA 38A SEC B	3.50
G 203	P NARREE WORRAN	PART CA 70K	1.75
G 204	P NARREE WORRAN	CA 33A SEC B	1.62
G 205	P NARREE WORRAN	PART CA 43,44,44A	2.50
G 206	P NARREE WORRAN	PART CA 70F NO SEC	24.03
G 207	P NARREE WORRAN	CA 113A	1.98
G 208	P NARREE WORRAN	PART CA 37,37A	12.50
G 209	P NARREE WORRAN	PART CA 35 SEC A	11.76
G 209A	P NARREE WORRAN	CA 36A SEC A	6.90
G 210	P NARREE WORRAN	CA 34B SEC A	0.50
G 211	P NARREE WORRAN	CA 22A SEC A	0.60
G 212	T EMERALD	CA 1A SEC B	1.45
G 213	T EMERALD	CA 5E SEC A	1.90
Note: A BMX track occupies part of this reserve. This use may continue for the time being, but the track should be relocated in the longer term and its site rehabilitated.			
G 214	P GEMBROOK	CA 43E	3.25
G 215	P NARREE WORRAN	PART CA 44 SEC A	2.36
G 216	P GEMBROOK, COCKATOO (T)	WRIGHT (AVONSLEIGH) FOREST	160.00
Notes:			
1. Operations will be required in the implementation of strategic fire protection plans.			
2. The Puffing Billy Railway easement is not included in this reserve.			
3. Purchased public land adjoining the railway, and forming a bushland link to the Emerald Lake Reserve is included.			
G 217	P WOORI YALLOCK	ADJ CA 74	1.50
G 218	P NANGANA	CA 80B	1.00
G 219	P GEMBROOK	CA 10 NO SEC	11.77
G 220	P GEMBROOK	CA 41 SEC B	29.60
Notes:			
1. This area was part of a large reserve vested in the Zoological and Acclimatisation Society last century. Its historical associations should be recognised by the land managers.			
2. The wet sclerophyll forest vegetation should be protected.			
3. Existing recreation uses may continue on part of the reserve.			
G 221	P GEMBROOK	CA 71B,93C	2.00
G 222	P GEMBROOK	CA 103A	74.36
G 223	P WOORI YALLOCK	ADJ CA 29	1.25
G 224	P WOORI YALLOCK	CA 61E	3.75
G 225	P WOORI YALLOCK	CA 38E	0.81
G 226	P WOORI YALLOCK	CA 68K,69L	6.00
G 227	P BEENAK	CA 70,70F,70E,72A	123.38
G 228	T BRITANNIA CREEK	CA 2 SEC 6	5.85
G 229	T BRITANNIA CREEK	CA 1A,4 SEC 4	1.70
G 230	P BEENAK	CA 50H	1.21
G 231	P BEENAK	CA 50B	3.92

(continue)

Table 19 (continued)

Recommendation	Parish (P) or Township (T)	Description	Area (ha)
<i>Proposed bushland areas (continued)</i>			
G 232	T POWELLTOWN	CA 5,6A SEC G	0.50
G 233	P NEERIM	CA 6A	2.80
G 234	P NEERIM, NOOJEE (T)	CA 165B (NE); CA 3A,20 SEC 3 (NO)	51.30
G 235	P NEERIM	CA 174B	1.00
G 236	P NAR-NAR-GOON	CA 17T	4.35
G 237	P NAR-NAR-GOON	CA 131B	2.05
G 238	P BUNYIP	ADJ CA 83C	1.21
G 239	P BUNYIP	CA 36A	0.10
G 240	P KOO-WEE-RUP EAST	CA 69E SEC B	6.50
G 241	T DROUIN	CA 26 SEC 12	1.84
G 242	P NEERIM	CA 4 106G	7.40
G 243	P NEERIM EAST	CA 7C SEC A	5.26
G 244	P TANJIL	CA 6B	3.50
G 245	P KOO-WEE-RUP	CA 30A SEC J	0.20
G 246	P KOO-WEE-RUP	CA 1G,1F SEC H	1.11
G 247	P YANNATHAN	CA 94A	1.80
G 248	P LONGWARRY	CA 47B	2.00
G 249	P YARRAGON	CA 33A of D	0.50
G 250	P TYABB	CA 3C	10.11
G 251	P MOOROODUC	CA 90A,91C	18.80
Note: The existing youth camp may remain, subject to its area not being enlarged and no further vegetation being removed.			
G 252	T WARNEET	CA 33,34 SEC A	2.46
G 253	T WARNEET	PART CA 53 SEC B	1.40
Note: This reserve includes a CFA shed.			
G 254	P LANG LANG	CA 78K	23.03
G 255	P LANG LANG	CA 44B,44C	2.02
G 256	P ALLAMBEE EAST	ALLAMBEE AND CHILDERS PLANTATION	234.00
Note: The remnants of mature wet sclerophyll forests within these plantations are of botanical significance and should be protected.			
G 256A	P ALLAMBEE EAST	CA 18F	1.00
G 257	T COALVILLE	CA 2-9,18-26 SEC 1; CA 1,2, 7-19 SEC 5	2.70
G 258	T COALVILLE	CA 4,5,6 SEC 7	22.90
Note: Regarding G257 and G258, the historical associations of the Coalville township should be recognised by the land managers.			
G 259	T OSBOURNE	CA 43A SEC A; CA 17A,8A,42A, 42B SEC B; CA 7A SEC 1	14.50
G 260	P KANGERONG	CA 24C	4.85
G 262	T RED HILL SOUTH	CA 14 SEC A; CA 31,32,33 SEC B	1.66
G 263	T BALNARRING BEACH	CA 36A	2.48
G 264	P FINGAL	CA 29A	0.81
G 265	P FINGAL	CA 34A	2.02
Notes:			
1. This area was previously recommended for inclusion in the Cape Schanck - Arthurs Seat Regional Park.			
2. The land managers should remove the pine tree seedlings invading this reserve from the roadside.			
G 266	T VENTNOR	CA 13 SEC 8; WITHIN SEC 4,5,6,7,14	21.10
Note: Part of this reserve requires revegetation.			
G 267	P PHILLIP ISLAND	CA 77A	68.25
Notes:			
1. This area was previously recommended as a wildlife reserve.			
2. The maintenance and enhancement of koala habitat will be required.			
G 268	P FRENCH ISLAND	CA 63E NO SEC	4.05

(continue)

Table 19 (continued)

Recommendation	Parish (P) or Township (T)	Description	Area (ha)
<i>Proposed bushland areas (continued)</i>			
G 269	T NEWHAVEN	CA 43A NO SEC	42.80
	Notes: 1. This area was previously recommended as a wildlife reserve. 2. The land managers should restore natural water levels. 3. Grazing and hunting are not permitted.		
G 270	T GRANTVILLE	CA 10 SEC C	2.50
G 271	P CORINELLA	CA 172B	4.61
G 272	P JUMBUNNA	CA 28B	0.17
G 273	T WONTHAGGI	CA 1,2 SEC 97	33.60
	Notes: 1. This area includes an adjoining section of the former station ground, managed by the Public Transport Corporation. While vegetated with mature pine trees with a grassy understorey, this area provides a link to 'Guide Park' and is also within a subsidence hazard zone. 2. The southern margin of the adjoining golf course which retains remnant vegetation, and the adjoining 'Guide Park' reserve, a proposed future access point, are included in this reserve.		
G 274	T WONTHAGGI	CA 43,44 SEC 101; CA 4L SEC 117; CA 1 SEC 102	8.80
G 275	T WONTHAGGI	CA 3,4,5 SEC 110; CA 15,16 SEC 111; CA 22 SEC 112	6.26
G 276	T WONTHAGGI	CA 7,11,12 SEC 34	1.27
G 277	T WONTHAGGI	CA 20L,20M,20N,20P SEC 100	12.24
G 278	T WONTHAGGI	CA 13 SEC 61	6.09
	Note: The extraction of sand may continue until 1997 or until economic resources are exhausted (whichever is sooner) at which time the pit is to be rehabilitated.		
G 279	T WONTHAGGI	CA 5 PART CA 6 SEC 26	1.15
G 280	T WONTHAGGI	NE CA 8 SEC 8; SW CA 9 SEC 80	2.00
	Note: This area includes the adjoining unused road reserve.		

H. COASTS

Melbourne Area, District 2 includes the western coastal lands of Mornington Peninsula, above low-water mark of Port Phillip Bay, the Bass Strait coastline from Point Nepean to Cape Paterson, and the Western Port coastline. It also includes the coastal waters and seabed of Western Port, and extends 5.5 km seaward.

In November 1991, the government directed the Land Conservation Council to carry out an investigation of marine, coastal and estuarine areas of the State and to make recommendations on the protection of significant environmental values and the sustainable use of those areas.

The area being investigated in the Marine and Coastal Special Investigation extends from the Victorian off-shore territorial limit (5.5 km) to approximately one kilometre inland from high-water mark; it includes the land (terrain, and overlying water) affected by marine, estuarine, and coastal processes, as well as all islands surrounded by marine and estuarine waters. The landward boundary on Phillip and French Islands is also about one kilometre inland from high water mark.

The focus of that investigation is marine ecosystems. It will cover issues relating to the protection and/or sustainable use of marine resources along the Victorian coast, including that within Melbourne Area, District 2, and will include the extensive inter-tidal flats of Western Port. Issues relating to the coastal land, on the other hand, particularly those of a local nature, are covered in these proposed recommendations. There may be a need to review some of these recommendations if new information becomes available during the course of the Marine and Coastal Special Investigation.

The coastline of the State, particularly that around Port Phillip Bay and Western Port, forms a significant public resource having value for utility, recreation and the conservation of natural, cultural, and historic values and sites.

The coastal reserves fringing Port Phillip Bay and Western Port rank among the State's primary coastal recreation resources; some three million people live nearby. Western Port is also readily accessible from the rapidly

expanding growth corridors to the east and south-east of Melbourne.

The main recreational activities here include swimming, fishing, boating, sailing, scuba diving and snorkeling, picnicking, sightseeing, relaxing, camping, and caravanning.

A number of navigation aids, piers, jetties, and marinas are located along the shore and the Department of Defence has a major establishment on Commonwealth land at Crib Point.

The open and sheltered waters and wetlands of the coast, Western Port, and other areas such as the Balcombe Creek estuary near Mornington, support important habitat for a wide diversity of water-birds and waders. They are among the most important areas in Victoria for international migratory waders and seabirds, such as shearwaters, skuas, albatrosses, prions, and petrels, including the white-faced storm petrel.

Planning and management

Council believes that management plans prepared for the coastal reserves should recognise and protect valuable wildlife habitat, particularly for birds, and also ensure the protection of sites of conservation, historic or cultural significance.

In formulating recommendations for public land along the coast, the Council is aware that coasts represent a dynamic zone of interaction between land and sea, encompassing fragile environments. In some instances coastal engineering works such as breakwaters and sea walls are depriving beaches of sand - resulting in severe beach erosion.

The Department of Conservation and Natural Resources is responsible for managing the majority of the foreshore areas of the study area. The Port of Melbourne Authority manages ports and has responsibilities in areas designated as "associated ports". Council is of the opinion that those coastal areas that are not currently required for port purposes should be managed as part of the coastal reserve until they are required for port development.

The Department of Planning and Development is responsible for overseeing the preparation of

management plans and the issue of consents for the coast and inshore waters of Port Phillip Bay. Proposals to carry out works, change uses, or plant or remove vegetation within the coastal reserve of Port Phillip Bay require the approval of that department which, in turn, is required to consult the Department of Conservation and Natural Resources and other relevant agencies to ensure, as far as practicable, that their views are reflected in any consent.

The Coastal Management and Co-ordination Committee (CMCC) has responsibility for overseeing the preparation of management plans and the issue of consents on the coastal reserve within Western Port, including French and Phillip Islands, and the coastal reserve from San Remo to Cape Paterson. At the time of writing, the CMCC is to be replaced by a

Coast and Bay Co-ordination Council. In addition, the department and the various Committees of Management responsible for the coastal reserve are required to ensure that their management is consistent with the State-wide coastal strategies prepared by the Department of Planning and Development.

COASTAL RESERVE

A coastal reserve is an area of public land on the coast set aside primarily for public recreation, education, and inspiration in coastal environments.

Coastal areas specifically reserved for some other purposes (parks, nature conservation reserves, sites for navigation aids, or major ports) would not be included in the coastal reserve.

Coastal Reserve

Recommendation

H1 That the coastal reserve shown on map A be used to:

- (i) provide opportunities for informal recreation for large numbers of people, and also for recreation related to enjoying and understanding nature
 - (ii) protect and conserve natural coastal landscapes, ecosystems, and significant geomorphological, archaeological and historical features for public enjoyment and inspiration and for education and scientific study
 - (iii) ensure the protection and conservation of important aquatic and terrestrial fauna and flora
 - (iv) provide opportunities for fishing and facilities for boating, together with the necessary navigation aids
- that
- (v) the area be zoned in order to provide for the range of uses outlined above
 - (vi) the special features described below be protected
 - (vii) the area be managed according to policies developed by the Coastal Management and Co-ordination Committee or its successor
 - (viii) in its policies for the coastal reserve, the Committee recognise the following principles:
 - (a) New roads should not be sited along the coast. Rather, they should be located far enough inland to avoid damaging sensitive environments or impairing the scenic qualities of the coastal landscape.
 - (b) Any major coastal development projects (such as jetties, marinas, mining, seawalls, reclamation, and non-maintenance dredging) should be subject to detailed environmental studies prior to commencement of work by the body proposing such development.

(continued)

H1 - Coastal Reserve (continued)

- (c) Occupation of coastal public land by individuals or organisations should be phased out, and no new occupation leases should be granted. Certain coast-oriented uses such as yacht clubs and surf clubs could be permitted, subject to conditions laid down by the managing authority.
- (d) When camp sites and car parks are to be established on the coastal reserve, the management authority should avoid locating these on sensitive areas or areas of importance for nature conservation or of archaeological significance. Consideration should be given to relocating some existing camp sites and car parks.

that

- (ix) the boundary of the coastal reserve be 150 metres seaward of high water mark pending the recommendations arising from the Marine and Coastal Special Investigation
- (x) grazing by stock not be permitted on the section of the reserve between San Remo and Kilcunda

and that it be permanently reserved under Section 4 of the *Crown Lands (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources.

Notes:

1. With respect to Recommendation H1(viii)(c) above, the private structures on the coastal reserve such as at Lang Lang Beach should be removed.
2. With respect to Recommendation H1(x) above, Council is aware that arrangements will be required with adjoining land owners to ensure that stock do not enter the reserve and that some form of cooperative fencing scheme may be required.
3. At Sunnyside, Safety Beach, and the Point King area - along the Port Phillip Bay section of the coast, and at the 'Punch Bowl' (east of San Remo), freehold land extends down to high water mark; the coastal reserve extending no further inland than high water mark.
4. Council considers that the number of structures in the camping area at Kilcunda should be kept to a minimum and, where possible, they be screened by vegetation. If the opportunity arises, the caravan park should be relocated.

Notes on sections of the Coastal Reserve and special features to be protected

The significance of all geological and geomorphological sites along the Victorian coast has recently been reviewed. Those listed below are considered to be of State significance, many more are of regional and local significance.

Port Phillip Bay

Site of geological and geomorphological significance:

- * Mount Martha - a raft of sedimentary rock that was not absorbed by the intruding magma and granitic shore platforms.

Sites of botanical significance:

- * Portsea to Dromana - coast banksia woodland (particularly the mature banksia overstorey) and coastal dune scrub

- * Mount Martha to Mornington - coastal dune scrub, coast banksia woodland, and orchid populations

Sites of significant bird habitat:

- * Balcombe Creek
- * Rosebud foreshore
- * Sorrento

Sites of historical significance:

- * Sorrento (Sorrento pier, Sorrento Park, kiosk and pier, steam train terminus, and the band pavilion)
- * Mornington (Mornington pier)

Stony Point to Crib Point

Some facilities on the foreshore at Stony Point are located on road reserves and 'station ground'; these areas all form part of the coastal reserve and should be reserved as such.

Council's recommendations in 1977 incorporated the foreshore between Stony and Crib Points within the coastal reserve but also provided for the future development of port facilities. Subsequently, the former Public Works Department undertook a land purchase program and an extensive area is now public land. However, this area is likely to become surplus to future port requirements.

Some of the land previously proposed for port development is disturbed. Some, however, retains a substantial cover of remnant vegetation including manna gum woodland which (east of Point Road) forms part of a larger area of coastal habitat considered to be of regional zoological significance.

Some uncertainty remains as to the need and location of new port facilities in Western Port. To provide flexibility for any future proposal for port development, while protecting the intrinsic values of the land, the Council has separately identified the harbour depot area at Stony Point and the jetty easement at Crib Point as services and utilities (port) reserves and placed the remainder in coastal reserve (see Map E and the discussion on port development options in Chapter M - Services and Utilities).

Site of botanical importance:

- * Stony Point - site of mangrove regeneration

Crib Point to Yaringa

This sector of Western Port has high value for port purposes. Relevant planning policies state that the development of this deep water resource should be sympathetic with the protection and maintenance of the sensitive ecosystem of Western Port. The sites proposed for port development in this area are described in Chapter M - Services and Utilities. Council considers that any new port development should be confined to the Stony Point - Crib Point area.

Much of the foreshore adjoining Hastings township was originally saltmarsh and has been subject to landfill with refuse. Little development has taken place on the site other than for recreation facilities and the 500-berth Western Port Marina. Recent works, including mounding and tree planting, have been undertaken in accordance with a landscape concept plan under a management plan being prepared by the Shire of Hastings. The plan

also proposes the development of a mangrove interpretation centre and associated walkways and an indigenous 'botanical garden' on the coastal reserve.

The Hastings Family Leisure Centre, Hastings Park, and the tennis and netball courts, bowling greens, and associated car-parking areas are not included in this recommendation for coastal reserves (see Chapter J - Community Use Areas).

Sites of botanical importance:

- * valuable remnants of sand heathland, swamp scrub, and coastal saltmarsh, as well as diverse orchid populations which may include the vulnerable green leek-orchid.

Sites of zoological significance:

- * Stony Point to Long Island Point - habitat for a range of species including the uncommon white-footed dunnart and the southern emu wren
- * the manna gum open forest and woodlands here, together with the fringing swamp paperbark and saltmarsh/mangrove zone provide habitat for 11 native mammal species including one of the few sites in the State where the New Holland mouse has been recorded, 127 native bird species including the uncommon southern emu-wren, 8 species of reptile and 7 species of amphibian.

Site of historical significance:

- * Jack's Beach tan pit

A large parcel of land lying between the townships of Crib Point and Hastings was originally purchased by a private company for industrial purposes but was sold when it became surplus to the company's requirements. The land has been subject to a number of development proposals, the last under the name of "Heritage Cove". While all of this land is freehold, the agreement entered into under the Heritage Cove proposal included the transfer into public ownership of a large parcel of land adjoining the coastal reserve. Most of this area supports remnant native vegetation, including saltmarsh, fringing melaleuca scrub and, in places, manna gum woodland.

The agreement was adopted by all parties, and was incorporated into the relevant planning scheme amendment. However, it was not

implemented before the development company ceased business. The status of the agreement remains unclear, but the mortgagees are investigating the development of the balance of the land.

The Council believes that, if the vegetated land comes into public ownership, it should be included in the coastal reserve.

North shore, Western Port

Much of the northern coastline of Western Port is included in a proposed fauna and flora reserve (see Recommendation C48). However, the developed sections at Cannons Creek, Warneet, Blind Bight, and Tooradin form part of the coastal reserve.

Lang Lang Beach to San Remo

A number of private structures located on the coastal reserve at Lang Lang Beach originated as holiday shacks, but are increasingly being used as semi-permanent accommodation. Council endorses the policy that the occupation of coastal public land by private individuals or organisations should be phased out.

Site of geological and geomorphological significance:

- * Corinella - a raised beach indicating a sequence of freshwater, marine, and intertidal sediments which record the Holocene sea level history of the region

Sites of historic and cultural significance:

- * Aboriginal archaeological sites at Settlement Point, Corinella, and Cobb Bluff
- * at Corinella, associated with the first 'permanent' European settlement in Victoria (note, the known archaeological sites are on freehold land)
- * remnants at Queensferry of a former jetty, possibly associated with a sawmill of the 1870s at Bass River

Phillip Island

The coastal reserve includes the adjoining areas which support vegetated land:

- * inland of the existing reserve at Ventnor
- * the adjoining Cowes caravan park

- * the existing Cowes West Bushland Reserve

(This reserve supports mature swamp paperbark and includes a fire dam. Plans are being considered for a new public boat ramp on the adjoining foreshore - this would have the advantage over the existing Cowes boat ramp in that it would not be subject to extensive sand movement.)

San Remo to Kilcunda

Council believes there is some merit in the suggestion received in a number of submissions that a coastal walking track should be established in this vicinity.

The State Electricity Commission maintains a testing station on the cliff top at Kilcunda to assess the corrosion resistance of products used on sub-transmission and distribution supply networks.

Site of geological and geomorphological significance:

- * between Griffith Point and Kilcunda - a cliffed, calcareous sandstone coast with shore platforms and arches

Site of botanical importance:

- * this section of coastline supports a variety of relatively weed free coastal vegetation communities.

Site of zoological significance:

- * the rare *Antechinus minimus* has been recorded near the mouth of the Powlett River

Sites of historic significance:

- * the dismantled Nyora to Wonthaggi railway passes through the reserve at Kilcunda includes a wooden trestle bridge
- * relics associated with the early mining of black coal in the Kilcunda area.

Wonthaggi

Much of the northern section of this coastline comprises beach and dune systems; further south, it is cliffed and fronted by reefs. Little of the area is disturbed and the coastal vegetation communities remain relatively weed

free. Part of this reserve is known locally as the 'William Hovell Flora and Fauna Reserve'.

The recently declared Bunurong Marine Park lies at the eastern end of the study area (see Chapter A - Parks). In the draft management plan for this park, the Department of Conservation and Natural Resources proposed that the park should incorporate the corresponding section of the foreshore reserve to form a marine and coastal park and in order to integrate its management with the marine section.

The values of the off-shore areas will be considered by the Council during the Marine and Coastal Special Investigation.

The small size, condition, absence of either known species of significance or land types not otherwise represented in the parks system, and the extent of development at Cape Paterson would mitigate against the coastal area being considered as a park in its own right. Nevertheless, this section of the coastline should be managed to protect the nature conservation values of the inter-tidal rock platforms and the sub-tidal reef environment (presently part of the Bunurong Marine Park), as well as to ensure that recreational access is controlled.

SCENIC COASTS

Council, in its final recommendations for the Melbourne Study Area in 1977, designated two sectors of the coastline as 'scenic coast' in which planning and management were to "give special emphasis to protecting their outstanding natural landscape qualities". A scenic coast was defined as a coastline of outstanding beauty that remains in a relatively unspoilt state.

Council believes that several stretches of the coastline within the study area are outstandingly beautiful and that it is important to protect their natural landscape qualities. In review of the 'scenic coast' designation, however, the Council recognised that the areas are not necessarily restricted to the public land component of the coastal environment. It now believes that adequate recognition of the intrinsic values is already provided through the specific parks and reserves recommended along the coastline and through the land use objectives of the more general coastal reserve category.

COASTAL WATERS

The coastal waters of the study area encompass the inter-tidal region and extend to the off-shore territorial limit (5.5 km) of the State of Victoria. They are indicated as H2 on Map A and include the waters of Western Port.

Council's current Marine and Coastal Special Investigation will cover issues relating to the protection and/or sustainable use of marine resources within Melbourne Area, District 2 and will include the extensive inter-tidal flats of Western Port. Accordingly, no recommendations for coastal waters are included in this document.

In due course the Council will prepare recommendations for the Marine and Coastal Special Investigation which will take into account such issues as:

- * protection of the natural environment and features of cultural significance
- * provision for controlled exploitation of natural resources, including the sustainable use of fish
- * aquaculture activities
- * provision for the use of the area for a diversity of recreational and educational purposes
- * provision of the navigational and safety aids and associated facilities necessary for shipping and boating.

WESTERN PORT WILDLIFE MANAGEMENT CO-OPERATIVE AREA

In recognition that some areas have values for wildlife conservation that overlap with capabilities for other uses, the Council, in its 1977 Final Recommendations for the Melbourne Area, recommended that the majority of the northern part of Western Port, and the waters off the southern shore of French Island, between Rhyll and Newhaven, and between the Bass River outlet and Reef Island be declared Wildlife Management Co-operative Areas.

The Council noted that these areas (indicated as H3 on Map A) have particular value for wildlife because of their special characteristics. The mangroves and seagrass flats, for example, support many forms of life and provide shelter

and breeding grounds for juvenile and adult fish. They also play an important role in the cycling of nutrient materials and energy for the whole bay. However, the waters are also used for recreation and for commercial and industrial purposes.

The 1977 recommendation also required that a management plan be prepared and agreed to by those government departments with responsibilities for the area in order to protect the wildlife values. The Council also noted that research was in progress at the time to identify areas that have outstanding wildlife values or are in need of special protection, that these will be considered for reservation as marine reserves when more information is available, and that parts of some Wildlife Management Co-operative Areas may eventually be included in these marine reserves.

Since 1977, substantial new information has been documented about the area's wildlife and other nature conservation values. The area has been listed on the Ramsar Convention as 'wetlands of international importance especially as waterfowl habitat'. It is also covered by two other international agreements concerning migratory bird species - JAMBA (with Japan) and CAMBA (with China).

The recommended Wildlife Management Co-operative Areas have not been implemented. Preliminary drafts of management plans have been prepared, but none have been finalised. A number of government agencies have responsibilities over the area but, because the areas remained as unalienated Crown land, none has overall responsibility. As a result, and in the absence of an agreement between all

affected parties, protection of wildlife values cannot be assured precedence over any other activity that may be proposed.

As noted previously, issues relating to the coastal area of Melbourne Area, District 2, particularly those of a local nature, will be covered during the present review; those relating to the protection and/or sustainable use of marine resources will be addressed during the Marine and Coastal Special Investigation.

In the interim, the Council endorses its 1977 recommendation that the areas "be used for the conservation of wildlife and for commercial and recreational activities". Council is of the view, however, that the nature conservation values of the areas, and particularly the wildlife values, are of such significance that they should be included in land use categories where their protection is the principle objective of management. The most appropriate form of protection, the appropriate range of uses, and the boundaries will be considered as part of the Marine and Coastal Special Investigation.

The Council is also of the opinion that the near-shore areas and channel access to the Warneet, Tooradin, and Corinella foreshores should remain subject to the provisions recommended for Wildlife Management Co-operative Area. That is, in order to protect the wildlife values associated with these areas, the Department of Conservation and Natural Resources should prepare management plans in consultation with the appropriate government departments with responsibility for various activities associated with either the sea bed or waters of the respective areas, and submit the plans to them for agreement.

I. ALPINE RESORTS

The *Alpine Resorts Act* 1983 established the Alpine Resorts Commission (ARC) and includes the following alpine resorts on a schedule to the Act:

Mount Hotham
Falls Creek
Mount Buller
Mount Stirling
Mount Baw Baw
Lake Mountain
Mount Donna Buang
Mount Torbreck

The last four listed fall within Melbourne Area, District 2.

The Council's Final Recommendations for the Melbourne Study Area in 1977 included the following comment: "The Council considers that snow sport development should be continued on Lake Mountain rather than any development take place on Mount Torbreck; and that developments on the Baw Baw plateau be confined to the vicinity of the current resort area".

In reviewing the uses and values of the scheduled resort areas in the current study, the Council appreciates that the growth and potential of cross-country skiing and other snow activities at Lake Mountain and Mount Baw Baw since 1977 are such that they have become, in scale, virtually a new industry with a legitimate claim to the use of public land - where it can be accommodated subject to maintenance of environmental values.

In its Final Recommendations in 1983, following the Alpine Area Special Investigation, the Council noted that cross-country or Nordic skiing involved few facilities and had little impact on the environment. The sport then utilised either marked tracks comprising pole lines, which normally delineate the route between particular destinations and usually weave between trees; or unmarked areas in which skiing is not confined to established tracks. In some cases, small over-snow vehicles (not grooming machines) are used to compact the snow surface on marked tracks.

Cross-country skiing has changed in recent years and some new techniques, such as 'skating', require special facilities such as machine-groomed trails. To provide sufficient clearance for the grooming machine and to provide enough room for two sets of tracks for people using the traditional 'diagonal stride' method as well as a track to accommodate skiers using skating and freestyle techniques, these trails usually comprise a 4m to 5m wide corridor. Some removal of trees and some benching (earthworks) and drainage management may be necessary to achieve the required standard and provide for both user safety and the range of skiing techniques.

In view of the potential environmental impact of constructed ski trails, the Council believes that guidelines or a code of practice for the construction and maintenance of ski trails should be promulgated. This code would apply to all trails in the Victorian snow country, whether within the Alpine Resorts, parks or State forest.

Code of practice

Recommendation

- II** That an independent committee be established to develop a Code of Practice for the construction and operation of ski-trails and runs for the full range of skiing activities.

Note:

This recommendation applies to both downhill skiing and cross-country skiing - on both groomed and ungroomed trails.

MOUNT BAW BAW

Previous recommendations

Recommendation A1, in the Final Recommendations for the Melbourne Study Area in 1977, which set aside the Baw Baw National Park, included the recommendation that:

- * no further villages be developed on the plateau
- * no skiing facilities be developed on the Thomson side of the plateau
- * the Nordic ski trails (St Phillack Loop Trail and the Tullicoutty Cup route) associated with the Baw Baw Alpine Resort be maintained

Council's Final Recommendations in 1977 for the Mount Baw Baw Alpine Resort, set aside 180 ha to include "the land directly affected by recreation and commercial development in the Baw Baw Ski Village". In 1980, on acceptance of the recommendation, the government revised the boundary to ensure that the resort area included the village, parking areas, ski runs, chair lifts and services (water supply and sewerage), as well as areas on which additional ski runs could be located.

The boundary between the resort and the adjoining national park in the vicinity of the Village Loop Trail remained uncertain, however. The alignment shown on the Certified Plans for the Baw Baw National Park differs from that shown for the Mount Baw Baw Alpine Resort and both differ from the boundary utilised by both the Proposed Management Plan for the Baw Baw National Park and the draft Mount Baw Baw Resort Strategy Plan. Accordingly, as part of this review, the Council is proposing that the boundary should follow the Village Loop Trail (see Recommendation I2 below) as well as providing for an extension to the resort to include a proposed new ski lift.

Following the Wilderness Special Investigation, the Council recommended in 1991 that the identified remote and natural attributes of certain areas be "maintained and protected to ensure that these attributes are not diminished when decisions that may affect them are being made, and in the development of management plans, while still providing for existing permitted uses".

The Council delineated an area of 6500 ha on the Baw Baw plateau - within the Baw Baw

National Park - as a "remote and natural area" for which the identified attributes are:

- * absence of vehicular tracks
- * virtual absence of structures
- * essentially natural condition
- * opportunities for self-reliant recreation, including snow-based activities.

The *National Parks (Wilderness) Act* 1992 has placed this area on Schedule 6 of the *National Parks Act* 1975. It surrounds the eastern part of the Mount Baw Baw Alpine Resort.

Under that *Act*, the Director must ensure that, in a remote and natural area:

- (a) no new roads or tracks for vehicles are constructed
- (b) existing roads or tracks for vehicles are not widened or upgraded in any way so that they can carry increased traffic or heavier vehicles
- (c) no new structures are constructed
- (d) no new facilities are installed
- (e) no new works are carried out that will adversely affect the natural condition of appearance of the area.

["Works" includes excavation and earth works and the destruction, removal or lopping of vegetation.]

Proposals by the Alpine Resorts Commission

The ARC considers the Mount Baw Baw resort to be important for novice and intermediate skiers in the near-Melbourne area, and as having the potential to assist in spreading the peak visitor levels being experienced at Lake Mountain which, in the 1991 winter season, amounted to 170 000 visitor days.

In the 1991 winter season, some 50 000 visitor days were spent at the Mount Baw Baw resort. Currently, the resort has a comfortable carrying-capacity of 1960 visitors per day. Proposed development works for the resort are expected to increase this capacity to 5200 visitors, with bed capacity increasing from 695 to 945.

The Commission proposed expansion of the resort boundary and/or sought access into the Baw Baw National Park, partly to provide for a new ski lift for down-hill skiing and, particularly, to provide for increased opportunities for cross-country skiing on prepared, machine-groomed trails.

New down-hill skiing facilities

Mount Baw Baw itself falls within the alpine resort and the southern and south-eastern slopes of the mount have high potential for development as ski-fields but have their lower slopes in the park - in the vicinity of Neulyne Plain.

As indicated in Recommendation I4 below, the Council is proposing that the resort area be extended to provide for facilities for a new chairlift and new groomed downhill runs near Neulyne Plain, subject to a number of conditions.

Mount Baw Baw Alpine Resort

Recommendations

- I2** That the south-eastern boundary to the Mount Baw Baw Alpine Resort follow the Village Loop Trail as indicated on Map A.
- I3** That the Mount Baw Baw Alpine Resort shown on Map A and comprising 415 ha, including the area encompassed by Recommendation I2 above, continue to be reserved as an Alpine Resort under the *Alpine Resorts Act* 1983 and managed by the Alpine Resorts Commission.
- I4** That the Mount Baw Baw Alpine Resort be extended to include a proposed chairlift and associated downhill ski runs near Neulyne Plain (indicated on Map A) subject to:
- (i) the preparation of an Environmental Effects Statement for the proposed chairlift and associated downhill runs in accordance with the provisions of the *Environmental Effects Act* 1978, which takes into account:
 - (a) a demonstrated need to expand the lifting and ski run capacity of the resort
 - (b) current and projected increases in visitor use of the downhill runs and lifts
 - (c) the extent to which the capacity of the existing downhill skiing facilities can be improved and the capacity of proposed facilities within the current resort area
 - (d) the formation of a Consultative Committee, incorporating representatives from key agencies, the proponent, and interest groups from the wider community, to guide the preparation of the Environmental Effects Statement
 - (ii) concurrent with (a) above, the preparation of an amendment to the Local Chapter of the Shire of Narracan Planning Scheme.

Note:
The ARC has not yet indicated the full extent of the proposed extension to the resort, but it would be of the order of 10 ha. Map A broadly indicate its location. If the Environmental Effects Statement shows that the proposal is environmentally acceptable, those downhill runs which are also acceptable would determine the limits of the extension of the resort in the vicinity of Neulyne Plain. This area would then need to be excised from the Baw Baw National park.

Alpine Resorts Commission proposal to provide managed, groomed cross-country ski-trails within the National Park

The ARC considers that the Baw Baw plateau (within the park) provides opportunity for an integrated trail network that services a variety of terrain for all skier levels, techniques and preferences. The distance from the existing resort boundary that such a trail network would

extend would be dictated by the availability of suitable terrain and the economic distance (about 1 km) that the grooming machines can range from the works centre.

In order to provide for skiers wishing to experience self-reliance in undeveloped natural environments, the marked ski trails associated with the Baw Baw National Park are currently neither machine-groomed nor packed.

The Council believes that the existing resort facilities at Mount Baw Baw provide an ideal base for cross-country skiing, and this use should be encouraged. It notes that new groomed trails are proposed within the existing Baw Baw resort.

However, the Council considers that there should be no expansion of the Baw Baw resort to provide for further machine-groomed cross-country skiing areas. Further, it has determined that there should be no development of machine-groomed cross-country ski-trails within the Baw Baw National Park. Consideration of the need for new machine-groomed, cross-country skiing areas should take account of the existing facilities and proposed developments at all resorts in the State and the intrinsic values of their environments.

Nevertheless, the Council considers that there should be provision for additional opportunities for cross-country skiing along marked tracks (including snow-packing or track setting as

required for safety) within the Baw Baw National Park in the vicinity of the resort. It notes that pole lines already exist between the Mount Baw Baw resort and Mount St Gwinear (within the park). Such tracks are compatible with Council's recommendations (in the Wilderness Special Investigation) concerning 'other areas with remote and natural attributes'.

This decision is based on the sensitivity to disturbance of the heathlands on the Baw Baw plateau, the need to protect the natural, scientific and educational values of the park, and the fact that, regardless of where they are positioned, the trails of the dimension and alignment required for the grooming machines would require some clearing of snow gum and would involve earthworks.

Earthworks and the removal of vegetation would diminish the attributes of remoteness and naturalness of the Baw Baw plateau which the Council recognised in its recommendations following the Wilderness Special Investigation.

Development outside resort

Recommendation

- 15 That no development of machine-groomed cross-country ski-trails be permitted outside the area of the Mount Baw Baw Alpine Resort determined by these proposed recommendations.

LAKE MOUNTAIN

Previous recommendations

In its 1977 recommendations for the Melbourne Study Area, the Council set aside 2400 ha as the Lake Mountain State Park. The recommendation included that: "the area continue to be developed as a day-visitor area for snow sports such as snow play, cross-country skiing, and limited downhill skiing". Its boundary corresponded with the 1250 m contour and included most of a 396-ha area set aside in 1971 under the *Forests Act* 1958 as an Alpine Reserve.

The government in 1978 approved the recommendation for the State park but action to formally reserve the area has not occurred. Instead, the Alpine Reserve was expanded and, in 1987, declared an Alpine Resort (of about 590 ha) and transferred to the Alpine Resorts Commission. The area of the resort on the

schedule to the *Alpine Resorts Act* 1983 incorporates the access road and visitor and car-parking facilities.

Outside the resort, the Lake Mountain area is managed by the Department of Conservation and Natural Resources as if it were a park. Most of the existing 28-km cross-country trail system associated with the resort falls within the area recommended as park and is managed by the Department of Conservation and Natural Resources.

Proposals for resort development

In 1990, the then Department of Conservation and Environment and the ARC released a draft management and development plan which describes development proposals for both the resort and the adjoining (park) land. A major premise behind the proposals was that existing and increased public use and vehicular access should be accommodated on the mountain, and

that all recreational and sporting activities, other than down-hill skiing, should be accommodated. The draft plan attempts to respond to an overcrowding situation, experienced on an average of 12 days each year, by increasing the on-mountain facilities and separating cross-country skiing and snow play activities.

The draft plan has not been implemented.

The ARC is seeking designation of the whole of the previously recommended park as a resort on the basis that management of the main visitor centre and the trail network should be with the one agency, thereby increasing investor confidence, and that the Commission required secure tenure before it was feasible to further invest in trail development to meet demand.

Uses and values of the area

Skiing and snow-play facilities at Lake Mountain have been significantly upgraded since it became an Alpine Resort and the area has experienced an increase in winter visitation from 70 000 in 1982 to 200 000 in 1990; excessive patronage has forced closure of the gate four days each winter since 1989. The ARC considers it to be the fastest growing ski area in Australia.

The Council notes that the Lake Mountain area is ideally located as a day-visitor area for large numbers of people pursuing snow-play and cross-country skiing activities, especially from Melbourne. Demand is likely to continue to increase in the future, but there is a limit to the ability of the area to sustain expansion of the trail network and full capacity may be reached in the next few years.

The Lake Mountain area has very significant nature conservation values. It is notable for the high diversity of plant species (over 150 indigenous species) and communities - which encompass the full range of sub-alpine forms from alpine bogs, herbfield/grasslands, heaths, and wet alpine heaths, to woodlands, tall open forest and rainforest, within a relatively small area. More than one third of the plants recorded above an altitude of 1200 m are at the western limit of their distribution in Victoria and some species are at the lowest altitudinal limit of their range.

The botanical importance of the Lake Mountain area also arises from the presence of a number of botanically significant species, such as the

rare and restricted wood sorrel (*Oxalis magellanica*) and other rare and interesting species, such as bent-grass (*Deyeuxia parviseta*), wax berry (*Gaultheria appressa*), and mountain hook-sedge (*Uncinia compacta*), including three species endemic to Victoria - Baw Baw berry (*Wittsteinia vacciniaceae*), lilac berry (*Trochocarpa clarkie*) and forest sedge (*Carex alsphila*). An interesting (and very old) stand of mountain plum-pine (*Podocarpus lawrencei*) also occurs here.

The bog and heath communities display a unique ecology associated with the successional stages and include rare and interesting plant species such as Turquoise coprosma (*Coprosma moorei*), Baw Baw daisy (*Brachycome obovata*), forest sedge and lilac berry, which are apparently restricted to these sites.

The areas of botanical significance extend beyond the bogs and heathlands. Baw Baw berry and wax berry are associated with the snow gum woodland and the myrtle beech (*Nothofagus cunninghamii*) rainforest. Myrtle beech is also a species of biogeographical significance.

Much of the botanical value of Lake Mountain is in common with the Baw Baw National Park, except for the apparently unique feature of the ecology of the Lake Mountain bogs referred to above.

The Lake Mountain supports several faunal species of significance including:

- * Leadbeater's possum (*Gymnobelideus leadbeateri*), which has been recorded in both the alpine ash community and snow gum woodland.
- * broad-toothed rat (*Mastacomys fuscus*), which is rare in Victoria is likely to be found in tall alpine herbfield, fen, valley bog, raised bog, heath or woodland with a dense ground-layer of vegetation (Wallis *et al.* 1982).
- * dusky antechinus (*Antechinus swainsonii*), which was recently recorded in dense heath at Helicopter Flat. This species was not expected in the area.
- * tiger quoll (*Dasyurus maculatus*), a vulnerable species in Victoria, which has also been recorded at Lake Mountain in the past.

It was on the basis of values such as these along with the recreational values that the Council recommended in 1977 that the area become a State park.

On balance, the Council believes that the high conservation values of Lake Mountain must be protected and recognised. It re-affirms its recommendations of 1977 that the whole area, which includes the current Lake Mountain Alpine Resort, should be reserved as a park, in order to provide year-round management of the area and its sensitive environment. It is on the basis of these values that the Council considers that the area should be included as part of the Central Highlands National Park (see Recommendation A7).

Nevertheless, the Council agrees that the Lake Mountain area can support large numbers of skiers over winter and that development of additional machine-groomed cross-country trails would be appropriate subject to assessment of their environmental impact.

Management of the area

Since reservation of the Lake Mountain Alpine Resort under the *Alpine Resorts Act* 1983, management of the land comprising the originally proposed Lake Mountain State park has been divided between the Alpine Resorts Commission and the Department of Conservation and Natural Resources. The resort area currently includes the access road, car parks and other visitor facilities. However, most of the developed ski trails are situated outside the resort boundary and are on land managed by the Department of Conservation and Natural Resources.

Difficulties with respect to the co-ordinated management of the Lake Mountain area have arisen as a result of this division of responsibilities and differences in management philosophy. Consequently, the Council is of the opinion that both the environmental and recreational values of the area have suffered.

It is for this reason that the Council is firmly of the view that the area should be managed by a single authority with a clear direction to maintain and enhance both the environmental and recreational values of the area. The Council believes that winter recreation and the protection of significant conservation values can be achieved at Lake Mountain provided that the planning for recreational development recognises that significant and sensitive sites must be avoided, including the impact of off-

site effects. This would be facilitated by the development of a comprehensive management plan for the whole area.

Consequently, irrespective of which authority manages the land, the Council believes that a comprehensive study of the Lake Mountain area should be undertaken under the provisions of the *Environment Effects Act* (1978) and the *Planning and Environment Act* (1987). The objective would be to obtain an independent assessment of the draft Lake Mountain Management and Development Plan and to assess the environmental impact of all future proposed developments prior to any further works being undertaken. This would ensure that future development proposals are properly planned and managed so that snow-based recreation can continue to grow while maintaining the very significant conservation values.

Concurrently, the Local Chapter of the Shire of Alexandra Planning Scheme should also be amended so that future developments or particular management activities are prohibited in the most significant nature conservation areas. Permits would thereby be required for works that have the potential to diminish environmental values.

For this process to be successful the following matters should be addressed:

- * The proposed land manager of the skiing area should provide a written agreement that it accepts the process as outlined above and will co-operate fully.
- * The proposed land manager should meet the cost of the process.
- * The Minister for Planning should be the Planning Authority. The Planning process is to be undertaken concurrently with the Environmental Effects Statement.
- * A Consultative Committee incorporating representatives from key agencies, the proponent, and interest groups from the wider community should be formed to guide the preparation of the Environmental Effects Statement.

The land would not be transferred or formally reserved until the processes, as outlined above, had been completed.

The Council recognises that the management of an area of park by the Alpine Resorts Commission is now possible under recent changes to its legislation and this option was considered by the Council.

As indicated above, the Environmental Effects Statement (EES) should be very broad to enable all relevant issues to be considered. Accordingly, the EES should consider all the social, economic and environmental aspects of the proposed strategy plan, the protection of significant conservation values, and the need

for expanded facilities. In addition, in relation to all proposed works (including the future development of cross country trails, car parks, roads and other visitor facilities), it should consider alternatives and provide analysis of impacts, ameliorative measures and monitoring procedures.

Lake Mountain

Recommendations

- I6** That an Environmental Effects Statement of the Lake Mountain area be undertaken in accordance with the requirements listed above.
- I7** That, concurrent with I6 above, an appropriate amendment be made to the Local Chapter of the Shire of Alexandra Planning Scheme following approval by the Minister for Planning to ensure that detrimental activities are prohibited in areas of significant conservation value and that appropriate provision is made to meet the increasing demand for snow-based recreation.
- I8** That:
- (i) the Lake Mountain area be deleted from the Schedule to the *Alpine Resorts Act* 1983 and be included in the proposed Central Highlands National Park (see Recommendation A7), to be managed by the Department of Conservation and Natural Resources
 - (ii) the Alpine Resorts Commission, by arrangement with the Department of Conservation and Natural Resources, manage the winter recreation facilities and services at Lake Mountain
 - (iii) further major works (such as car parks, amenity buildings, and ski trails) should only take place in the Lake Mountain area following finalisation and adoption of a management plan for the area which is agreed to jointly by the Alpine Resorts Commission and the Department of Conservation and Natural Resources. Other works would be delayed pending the outcome of an Environmental Effects Statement, and ratification of an appropriate amendment to the local Planning Scheme
- and that
- (iv) the adopted management plan and Planning Scheme Amendment be binding on both the Department of Conservation and Natural Resources and the Alpine Resorts Commission.

MOUNT DONNA BUANG

Mount Donna Buang sits on the divide between Badger Creek (part of the Maroondah water supply catchment system) and the Yarra River.

It is the closest and most accessible site to Melbourne for snow-play, although snow cover in the area is unreliable and of only 60 or fewer days duration per year.

Facilities on the summit include toilets, a shelter and gas barbecues; other facilities are located on the access roads. There is no commercial development.

The area formed part of the Yarra Valley

Multi-purpose Park (A29) in the Land Conservation Council's Final Recommendations for the Melbourne Study Area in 1977 and was zoned for Intensive Recreation. The recommended zoning of the Yarra Valley Multi-purpose Park, outside the water supply catchments, was approved by the government.

Mount Donna Buang forms an important recreational component of the proposed Central Highlands National Park (see Recommendation A7). It is therefore proposed that the Mount Donna Buang area be deleted from the Schedule to the *Alpine Resorts Act* 1983 and included in the proposed Central Highlands National Park.

Mount Donna Buang

Recommendation

- 19 That the Mount Donna Buang area be deleted from the Schedule to the *Alpine Resorts Act* 1983, and be included in the proposed Central Highlands National Park (see Recommendation A7).

MOUNT TORBRECK

Council's Final Recommendations in 1977 for Hardwood Production in the Melbourne Study Area, provided for particular values to be protected within the areas of Reserved Forest by means of reserves under Section 50 of the *Forests Act* 1958 or by management prescription. Specifically, it recommended that "the scenic features and environs of Mount Torbreck should be maintained" (1977 Recommendation E10 - Rubicon Forest).

Although the area is included on the Schedule to the *Alpine Resorts Act* 1983, no commercial development has taken place and its remote nature would make such development expensive.

In recognition of the intrinsic values of Mount Torbreck and, consistent with Council's recommendations for similar areas across the State, it is now proposed to set the area aside as a natural and scenic features reserve under the *Crown Lands (Reserves) Act* 1978 (see Recommendation G44)

Mount Torbreck

Recommendation

- 110 That the Mount Torbreck area be deleted from the Schedule to the *Alpine Resorts Act* 1983 and be reserved under Section 4 of the *Crown Lands (Reserves) Act* 1978 as a Natural Features Reserve (see Recommendation G44).

J. COMMUNITY USE AREAS

All public land is utilised either directly or indirectly for the benefit of the community. The majority of public land is available for some form of direct use by the public, notably for education or recreation, both of which are consistent with most of Council's land use categories. The areas recommended in this chapter are those where education, recreation or other community use is the primary land use objective.

This chapter is divided into four sections - education, recreation, parkland and gardens, and buildings in public use. Respectively, these areas include land used for environmental education, recreation areas such as sports grounds, local parks and formal gardens, and buildings such as community halls and schools. These are discussed separately below.

COMMUNITY USE AREAS

Recommendations

J1-J10,J15,J17-J24 That these areas be used for education, recreation or other community purposes

that

- (i) appropriate facilities be provided
- (ii) where relevant, and except where not compatible with the above, features of cultural significance, natural surroundings and the character and quality of the local landscape be maintained or restored
- (iii) unless specified below, harvesting of forest products, hunting, and 'stone' extraction (as defined in the *Extractive Industries Act 1966*) not be permitted

and that they be permanently reserved under Section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources, except where otherwise specified.

EDUCATION AREAS

Public land provides opportunities for a wide range of educational activities. Such activities include informal nature study and appreciation or more formal education programs run by schools, tertiary institutions, or other educational bodies.

Environmental education is a fundamental step in the conservation of natural resources. It has become an important part of school curricula, and forms the basis of courses for tertiary and adult students.

Environmental education is necessarily linked with field studies. It is concerned with studying and appreciating all sorts of environments - natural ones undisturbed by human activities, natural ones manipulated to

produce particular products such as hardwood timber, or drastically altered ones such as are found in urban and agricultural areas. One of its basic requirements is access to land.

Council, realising that public land provides excellent opportunities for studies of a wide range of environments, has recommended that almost all public land (including parks, nature conservation reserves, natural features reserves, and State forest) be available for educational uses. Council believes that in most situations educational studies can take place without conflicting with the primary use for which an area is set aside. Indeed in some cases it is the manipulation of the land for the primary use that makes the area of value for environmental education.

Council believes, however, that it is necessary for some relatively undisturbed land to be set aside specifically for educational uses as, unless this is consciously done, such environments will tend to be changed by other uses. In these areas education would be the primary use and other uses would only be permitted when not in conflict with the educational use. Activities permitted in education areas that may not be appropriate elsewhere would include long-term studies, collection of biological material, biomass studies, and the establishment of growth plots. They may also provide opportunities to demonstrate techniques of erosion control and the restoration of native vegetation and stream conditions to a more natural state.

In selecting land for education areas, the Council has sought to provide areas:

- * giving examples of major land types
- * with maximum diversity of vegetation types, soils, etc., and with natural boundaries
- * located with consideration of ready access by users
- * located so as to minimise the danger that wildfires present to users
- * located in proximity to other land types and to a variety of other land uses
- * large enough to prevent over-use and to allow for zoning to protect areas of special value
- * selected so as to minimise erosion and pollution hazard

No one organisation should have the exclusive right to use a particular education area, as it is important that students have the opportunity to visit a number of education areas in various land types throughout the State. Minimum facilities such as toilets and shelters may be required at each education area, and it may be desirable to have accommodation either on the area or at some nearby locality. Whether or not accommodation facilities are located on the education area will depend on its proximity to other areas of educational value in the region and also on the availability and location of

existing accommodation. In forested areas accommodation and other permanent facilities should only be provided where adequate safeguards against fire can be made.

The Council believes that management plans for education areas should be prepared by the Department of Conservation and Natural Resources. Planning and implementing the education aspects together with coordinating the use of areas should be done in consultation with the Department of Education, other user groups in the education system, and with community bodies with an interest in environmental education.

Some of the education areas previously recommended by Council have received little use to date. However, as knowledge of their role has expanded and interpretative material has become available usage is increasing. A number already receive significant use, especially those closely associated with developed camps, such as the Kinglake West and Castella Education Areas. An excellent student guide has been published for the Andrews Hill Education Area.

In addition to those that have been formally designated for educational use, other areas are, or will be, used for environmental education. The most notable within State forest is the planned Toolangi Forest Discovery Centre. This new centre will provide school education programs and forest interpretation programs to provide first-hand experience of the management and use of forests. The development will include the creation of a demonstration forest in the adjacent mountain ash regrowth. Another area of State forest, at Rubicon, is used by a local Aboriginal community in conjunction with Camp Jungai - an enterprise which operates educational camps to demonstrate traditional Aboriginal culture.

Other education and interpretation facilities and programs are operated within national parks, Healesville Sanctuary, Snobs Creek hatchery, and (by Melbourne Water) at some water catchment areas.

Education areas

Recommendations

J1-J10 That the areas listed below and shown on Map A be used in accordance with the general recommendations for Community Use Areas outlined above and to provide opportunities for students of all ages to:

(continued)

J1-J10 - Education Areas (continued)

- (iv) study the nature and functioning of reasonably natural ecosystems in a manner such that the integrity of those ecosystems is maintained as far as is practicable
- (v) compare the ecosystems within education areas with other nearby natural and modified systems
- (vi) observe and practise methods of environmental analysis, and the field techniques of the natural sciences
- (vii) conduct simple long-term experiments aimed at giving an understanding of the changes occurring in an area with time.

Notes:

1. Council notes that ecologically sensitive fire management of the vegetation communities, especially heathlands, heathy woodlands, and foothill forests, will be necessary to maintain the high quality and species rich botanical values of the Tonimbuk Education Area (J4).

2. The Council considers that the former Kinglake education area (M8 in Council's 1977 recommendations) has poor access which causes problems with respect to visitor safety in the fire season - a factor which detracts from its value as an education area. It is recommended for incorporation into the abutting Kinglake National Park. The area receives little educational use.

3. The former Tanjil Education Area (M14 in Council's 1977 recommendations) is now mostly inundated by the waters of the Blue Rock Reservoir. Council, in its final recommendations for the Hill End Special Investigation (January 1983), included this area within a water production reserve (now D12).

4. Several of the above areas abutting national or State parks have been included in the *National Parks Act 1975* schedules. It is not intended that they be re-reserved under the *Crown Land (Reserves) Act 1978*.

Existing education areas

- J1** Kinglake West (280 ha)
- J2** Andrews Hill (210 ha)
- J3** Castella (50 ha)
- J4** Tonimbuk (250 ha)
- J5** Crossover (60 ha)
- J6** Fumina South (170 ha)
- J7** Boggy Creek (160 ha)
- J8** Gembrook (65 ha) (formerly an education zone within recommendation A29 - Yarra Valley Multi-purpose Park)
- J9** Hoddles Creek (285 ha) (as for Gembrook)

New education area

J10 Lang Lang (20 ha)

This former bushland reserve occurs on a south Victorian coastal plains land type otherwise unrepresented in Council's Education Area system. It has a range of vegetation types, is readily accessible, is well located with respect to other land types, is large enough to prevent over-use, and is located such that wildlife hazard, erosion and pollution are minimised. In particular it would allow study of the composition and dynamics of the now-depleted sand heathland and coastal grassy forest communities and of the rehabilitation of adjacent degraded sand pits.

This area includes a camp operated by the Scout Association of Australia with a large number of buildings and other structures. The camp is a long standing one and is regularly used and serves a regional community.

Lang Lang education area

Recommendation

J10 That:

- (viii) scouting activities be permitted, subject to any additional buildings being confined to the existing developed area
- (ix) camping activities be strictly controlled in order to minimise disturbance to the natural environment.

Note:

Those parts of the former rubbish tip and sand pits on the western edge of the reserve should be rehabilitated. Those sections west of the road should be included in the adjacent recreation reserve.

Other existing area used for educational purposes

Woorabinda

Recommendation

J11 That the area of 49 ha indicated on Map A and listed below be used for those purposes approved by the government following publication of the final recommendations for the Latrobe Valley Special Investigation in October 1987

and that current tenure and management continue.

Notes:

1. This area is under lease from the SECV to the adjoining Camp Woorabinda.
2. This was Recommendation H7 in the final recommendations for the Latrobe Valley Special Investigation.

Additional areas to be used for educational purposes

Additional areas

Recommendations

J12-J13 That the areas shown on Map A and described below be used for educational purposes and that current tenure and management continue.

Note:

These two areas were formerly education zones in recommendation A29 - Yarra Valley Multi-purpose Park.

J12 Haining Farm (65 ha)

This area is managed as an operating dairy farm and provides an educational program

for school groups. The Department of Conservation and Natural Resources manages the area which is on Schedule 3 to the *National Parks Act 1975*.

J13 Glenewart (130 ha)

This area has operated in the past as an environmental education centre. It is

vested in the Victorian Conservation Trust, and now managed in conjunction with Haining Farm. It retains indigenous vegetation.

RECREATION

The term recreation includes the multitude of different activities that people undertake during their leisure time both indoors and outdoors. It is an intrinsic feature of our way of life and has numerous and diverse social benefits. Participation in recreation and the provision of opportunities for it are also of economic benefit, forming the basis of our tourist industry. With increasing population and increasing availability of leisure time, the demand for recreational venues is also increasing.

Outdoor recreation is of particular interest to Council, as the public land of the study area provides important opportunities for it. Most public land is available for recreational use of some sort and the variety of reserves recommended by the Council provides for a range of recreational opportunities. While specific reserves have not been set aside for each form of recreation, most activities can be accommodated somewhere on public land.

Throughout, these recommendations refer to the many forms of outdoor recreation in a number of ways:

- * Formal recreational activities include all organised sports and other group activities, while activities such as picnicking, fishing and hiking are grouped as informal.
- * Passive recreation covers situations where the individual obtains recreation through enjoying the sights, sounds and atmosphere of the surrounding environment while expending little physical effort. Examples are picnicking, nature observation, and strolling.
- * Active recreation covers situations where the individual must expend considerable physical effort to obtain some mastery of physical forces in order to satisfy particular recreational needs. Examples are playing organised sport, bushwalking, and water-skiing.
- * Open-space recreation includes all recreational activities that require spacious outdoor surroundings, whether the activities be active or passive, formal or informal.

- * Intensive recreation involves large numbers of people per unit area. For example, the Port Phillip foreshore and parts of the Dandenong Ranges would be considered to be intensively used.

In view of the sustained demand for outdoor recreation and the high capability of some public land to meet this demand, the Council, in making its recommendations, has suggested that the majority of public land should be available for recreational uses of some sort. Council could not, however, make recommendations covering in detail all the forms of recreation currently pursued on public land. These include activities such as swimming, bushwalking, camping, orienteering and rogaining, canoeing, fishing, hunting, fossicking, picnicking, horse-riding, boating, trail-bike riding and pleasure driving. Council believes that activities such as these can be accommodated on public land, without detriment to other values, and points out that outdoor recreation in general is an acceptable primary or secondary use of much public land (except reference areas and some water storages and their buffers). It has left the details, including the appropriate zoning and level of each activity, to the land and water managers. Council has not specified whether permitted uses may be carried out by private individuals, members of organised clubs, or by participants in commercial tours; other than that a balance should be provided by managers between commercial tours and other recreational groups.

Recreation activities vary in their requirements for types of land, size of area, and site location. They also differ in their impact on the land and on other activities (including other forms of recreation).

All recreational activities impact to some extent on the environment and on other people, depending on the interaction of such factors as:

- * the nature of the recreational activity
- * the intensity of use of an area, as measured by the number of participants, size of group, and the frequency, timing and duration of the use

- * the sensitivity of the environment to change
- * the degree of management intervention to make the environment less sensitive to recreational impacts.

Generally, any one activity pursued at a low level of intensity in appropriate conditions poses little threat to the environment and seldom conflicts with other activities. With increasing level of use, however, conflicts and problems can arise, particularly that of damage to the environment and interactions between recreational activities.

Council therefore believes that the land and water managers should aim at managing the levels and patterns of recreational use according to the capability of the area to sustain such use (without irreversible damage or significant conflict with its primary purposes), while at the same time avoiding unnecessary restrictions. Managers provide recreational opportunities, while maintaining different 'settings' where differing levels of recreational use are encountered.

Special care will be required in the location and management of areas zoned for intensive recreation, to prevent environmental damage. Thus, more stringent restrictions can be expected in areas where the vegetation and soils are sensitive to damage, where the level of use is high, or where special natural and cultural features require protection.

The involvement of peak recreation groups in the planning process is likely to lead to the early identification of key issues and facilitate the development and implementation of management strategies and codes of conduct. Such groups can also assist in the systematic documentation of recreation resources and in the development of acceptable methods of identifying and evaluating these. Consideration should be given to providing the resources and infrastructure needed to enable community organisation to become active partners in the decision making process.

Six particular forms of recreation that may require specific consideration by the land manager, whether now or in the future, are further discussed below. Alpine resorts are discussed in Chapter I.

Motorised recreation

Much outdoor recreation depends on motor vehicles or watercraft. Conventional cars,

four-wheel-drive vehicles or motorcycles, may be used for touring and sightseeing, as a means of obtaining access to a particular area where other forms of recreation will be undertaken, or - when they are driven in competitive rallies or in adverse but challenging road conditions - as a source of recreation in themselves.

Most visitors to the area use two-wheel-drive vehicles and keep to the major through routes. Others use four-wheel-drive vehicles or motorcycles to gain access to more isolated areas via the secondary system of tracks. The track system was constructed mainly for timber harvesting, forest management, and fire protection. The roads are frequently rough and sometimes steep and are seldom designed to cope with increasing use by recreation vehicles. Consequently, even legal use of roads can pose maintenance problems for the land manager. Authorities responsible for their construction and maintenance on public land may close roads temporarily or permanently when traffic exceeds their physical capacity, for safety reasons, or when use by vehicles is in conflict with the area's primary uses. Erosion hazard areas may be proclaimed according to the provisions of the *Land Conservation (Vehicle Control) Act 1972* and its regulations, enabling strict control.

If the increased recreational use of roads is to be catered for, adequate funding should be provided for road maintenance, otherwise deterioration leading to erosion is inevitable. Council notes that a levy has been placed on the registration fees of four-wheel-drive vehicles, the proceeds of which are designated for track maintenance.

A number of four-wheel-drive clubs have acknowledged the need for restrictions on motorised recreation in certain areas and during some periods of the year. Clubs are often actively involved in track clearing in remote areas, and have assisted in rubbish removal and restoration of huts and other areas. Some clubs have search and rescue units. Clubs also inform and educate participants about the environmental consequences of improper use of their vehicles. The 'Tread Lightly' program run by the Victorian Association of Four Wheel Drive Clubs Federation has such objects. Authorities should continue to promote responsible attitudes to the use of four-wheel-drive vehicles and trailbikes, in conjunction with user groups and the general public.

Growing numbers of people are becoming involved in recreational touring on public land. Motor vehicles, including motorcycles may only be used by licensed drivers on public land if they are registered, and only on tracks formed for the passage of vehicles having four or more wheels. Driving off such roads or tracks is prohibited on all public land, whether in parks, State forest, or other reserves. Some exceptions are provided for in the *Act*.

Forest areas are used for competitive events such as formal car rallies and motorcycle trials. These have the potential to accelerate road damage, disturb wildlife, and jeopardise the enjoyment and safety of other forest users. Strict standards imposed by the Department of Conservation and Natural Resources and the regulations made by organising bodies such as the Confederation of Australian Motor Sports or the Australian Cycle Union assist in reducing their impact. They are often run at night and roads are temporarily closed to public use. The Council considers that such events could continue, subject to restriction of vehicular movement to defined tracks and to the implementation of rehabilitation works where necessary.

Another form of motorised recreation involves use of watercraft such as speed and jet boats, houseboats, dinghies, hovercraft, and jet skis. They may be used to tow a water skier, for pleasure cruising, sightseeing, and, most commonly for fishing.

The issues of boat wakes, induced erosion, turbidity, noise, and disturbance of sensitive areas require management attention to ensure the areas chosen are capable of sustaining the use of powered watercraft, and to reduce conflict with other environmental and recreation values.

Marinas

The increasing use of Port Phillip Bay and Western Port for recreational boating has resulted in a corresponding demand for berth sites for watercraft.

Since Council's 1977 recommendations, the Government has approved the development of a large marina at Hastings, the redevelopment of small marinas at Yaringa and Newhaven, and assessed Environmental Effects Statements for proposals at Sorrento and San Remo.

Council is aware that there have been suggestions that additional marinas be

developed and that a number of sites is under consideration. Several sites involving coastal reserves and adjoining offshore land have been identified through bay-wide planning strategies and a two-stage planning process established. Council intends to consider the issue of marinas in detail in its current Marine and Coastal Special Investigation.

Hunting

Public land in the study area offers opportunities for the hunting of game species, such as sambar deer, as well as for vermin such as rabbits and foxes.

The Sambar deer is found throughout much of the forested lands to the east of Melbourne. It is the largest deer found in Australia and is considered by many hunters to be the premier game species.

The two most common forms of deer hunting practised are stalking, which is the most popular, and hunting with hounds - both forms involving the use of firearms. Other hunters use bows and arrows. Under the *Wildlife (Game) Regulations* 1976, No. 2, hunting of Sambar is permitted year-round, although in practice, most deer hunting is undertaken during the cooler months when the success rate is higher.

Hunting and the use of firearms is, other than in a few specific instances, not permitted in national parks. They are also not permitted in most State parks, nature conservation reserves, reference areas, education areas, licensed water frontages, in a number of minor reserves, and land in and around built-up areas (see Note 5 to recommendation F1 - Walhalla).

Deer hunting is also currently not permitted in the Central Highlands sanctuary, an extensive area - some 223 000 ha - between Healesville and Eildon. Like all of the sanctuaries originally declared prior to the *Wildlife Act* 1975, this sanctuary provides protection for 'game' (including deer) as well as 'native game' (eg certain native ducks).

Council does not believe that it is still necessary, nor desirable, to set aside areas of public land for the protection of Sambar deer. With respect to the provision of sanctuaries for other game species, some 40 percent of the current Central Highlands Sanctuary has been recommended by Council for inclusion in parks or nature conservation reserves where hunting is not permitted.

Accordingly, the Council recommends revocation of the Sanctuary (see Chapter E). Other recommendations propose that deer hunting no longer be permitted in the Eildon State Park, but that an area of some 20 000 ha adjacent to this park but within the Central Highlands Sanctuary area be available for hunting by stalking only (see Chapters A and E).

Excluding existing and proposed parks and nature conservation reserves, some 150 000 ha of former Sanctuary will remain in State forest and be available for hunting, under these recommendations.

The use of firearms for non-hunting purposes, such as target shooting, is permitted in formal rifle and pistol shooting ranges, and in addition, subject to the provisions of the *Firearms Act 1958*, throughout State forest.

Horse-riding

No estimates are currently available on the numbers of horse-riders using public land in the study area, as many of the activities are undertaken by individuals and small groups with no club or commercial associations.

It is a popular activity throughout the area and involves day trips and overnight trips with camping. Bunyip State Park and the Kurth Kiln regional park are heavily used for horse-riding and specific tracks are used in the Kinglake National Park and the Cathedral and Dandenong Ranges State Parks.

Council believes that the use of horses could be permitted within the park system but that the details should remain with the land manager.

It may be necessary to place conditions on the time, location, and the manner in which horse-riding can be undertaken in order to minimise conflicts with other park users, to prevent the spread of weeds, and to protect environmental values. It may also be necessary to prohibit this activity in particularly sensitive areas.

Overseas research and local evidence have identified environmental effects of horses which include the spread of weeds, track erosion, overgrazing at specific sites, and trampling of vegetation.

The Bicentennial National Trail - a horse-riding trail between Healesville and Cookstown (Queensland) - traverses the Central Highlands.

Recreational fossicking

Recreational fossicking most commonly involves metal-detecting and gold-panning and is a popular recreational activity in parts of the study area. Most fossickers seek gold, but there is also interest in gemstones. Fossicking is often focussed in and along creeks and rivers as their alluvial processes concentrate the heavy gold and gemstones and the running water assists fossicking by allowing wet panning and sieving, and removing mud that may obscure the colour of precious and semi-precious gems.

To fossick or search for gold and gemstones, a Miner's Right or Tourist Fossicking Authority is required under the *Mineral Resources Development Act 1990*. It entitles the holder - and in the case of a Tourist Fossicking Authority, those accompanied by the holder - to search for minerals on both Crown land and (with the owner's permission) private land. Specific conditions apply to the search for minerals on land held under a mining licence. In common with other exploration and mining activities, fossicking is excluded by legislation from reference and wilderness areas, and in general from national and State parks.

Activities under a Tourist Fossicking Authority or Miner's Right are restricted to the use of non-mechanical hand tools. The use of explosives, the removal or damage of any trees or shrubs, and the disturbance of an Aboriginal place or object is prohibited.

Eductor dredges are portable, floating devices used for dredging the gravel of watercourses for gold and tin. Since November 1990, their use has not been permitted in Victoria. The government has announced the establishment of a Parliamentary Environment and Natural Resources Committee enquiry into eductor dredging.

Guidelines and recommendations relating to fossicking and prospecting are given in Chapter L: Earth Resources.

Long distance trails

Over the past decade there has been increasing interest in the development of long distance trails. They cater for walkers only, horse-riders and walkers, or for vehicle based users. Some have a historical basis, being coincident with the route of an early European explorer or early transport route. Others provide a

convenient route connecting places, or through areas of landscape interest.

Such trails have usually been established in response to proposals put forward by an enthusiastic interest group. Such groups may work with the relevant land managers to develop and maintain the trail. The tracks are based, to some extent, on existing access.

Within the study area a number of trails has been established. The first and perhaps most well known is the Alpine Walking Track, developed by the Federation of Victorian Walking Clubs, in partnership with the former Forests Commission. It is now maintained and managed by the Department of Conservation and Natural Resources and provides a marked trail from Walhalla, across Mount Baw Baw and the Thomson River catchment, then over the Victorian Alps to the New South Wales border. Most of the trail is designed for experienced and well-equipped bushwalkers as it crosses some of Victoria's most rugged and exposed country and is comparatively remote from main roads and habitation. 'Link tracks' connect to Woods Point (via McMillan's Track), Lake Eildon (via the Howqua Track), and to Warburton (via the Upper Yarra Track). Appendix VII specifies guidelines for management of public land adjoining the Alpine Walking Track.

Other tracks in the study area include: part (from Healesville via Marysville and Mount Bullfight to Knockwood) of the Bicentennial National horse-riding Trail between Melbourne and Cooktown in Queensland; Upper Yarra Track linking Warburton to Mount Whitelaw; Two Bays walking track across Mornington peninsula; Coppin's Track along Sorrento back beach and its extension towards Cape Schanck; the Walk Into History track in the Yarra Forest between Powelltown and Warburton (see Recommendation F12); and Wirilda Track along Tyers River from Tyers West to Moondarra Reservoir.

Tracks proposed in submissions include a coastal walking track between San Remo and Cape Paterson, and the establishment of a Victorian sector of a Hume and Hovell trail.

Hume and Hovell trail proposal

In late 1824 Hamilton Hume and William Hovell travelled through this region in the final stages of their journey from Sydney toward Western Port, with 6 men, horses and bullocks. Their route through the study area

started on 2 December 1824 near Merton. They walked over Puzzle Range and camped on Home Creek between Merton and Kanumbra. Following Home Creek downstream they crossed the Goulburn River near Molesworth. On 4 December they went across the Yea River south of Yea, followed Boundary Creek to Scotts Creek, then along the ridge south-west from Junction Hill, before camping, probably on Break O'Day Creek. After the next night on King Parrot Creek they attempted to find a route through the upper Wallaby Creek catchment. They failed owing to the steep, stony ground and thick brush, naming Mount Disappointment as it did not offer passage or give them a view of the south coast. After returning to King Parrot Creek they travelled north, to near Strath Creek, then west towards Mount Piper, camping on Sunday Creek at Broadford. They continued upstream along Sunday Creek then south down Merri Creek Valley, reaching the coast at Corio Bay on 16 December.

Their trip has had several enduring characteristics. Firstly, their glowing reports of 'excellent land' ... having 'the best soil' differed from Surveyor-General John Oxley's views that the land around Western Port was 'useless for all the purposes of civilised man', and encouraged the establishment of the Port Phillip Association. The colony later established (1835) by that Association became Melbourne.

Secondly, various features named by Hume and Hovell, including Goulburn River, King Parrot Creek, Mount Disappointment, Sunday Creek, and Mount Piper, are still associated with their trip.

Thirdly, their route across the Great Dividing Range near Wallan is basically that now followed by the Hume Freeway, the current main link between Sydney and Melbourne.

In New South Wales their route has been recognised by the development of the Hume and Hovell Walking Track traversing 372 kilometres from Yass to Woomargama. Investigation of a similar concept is now proposed for Victoria. This would involve both densely forested public land and substantially cleared open farmland. The trail would primarily be a walking route, with appropriate overnight campsites, although several of the historic campsites would be accessible by vehicle. Existing public land along the general route includes a section of the disused Tallarook to Mansfield Railway

(Merton to Yea), road reserves, river and stream frontage reserves, Kinglake and Mount Disappointment State forest, and Melbourne Water catchment (Wallaby Creek). At the time of the centenary of their trip, in 1924 a network of commemorative cairns was established. These could be included along a trail route.

The long distance trails referred to above are compatible with a range of land use categories and can facilitate appropriate use and appreciation of public land. There is a need to ensure that they avoid environmentally sensitive and unsafe areas, and that the responsibility for their maintenance is well defined. Ongoing monitoring is also required as to their compatibility with other public land values. Where trails are re-routed, adequate information should be provided to prospective users including on-ground temporary signs.

Recreational use by organised groups

Organisations such as schools, clubs, youth groups, and private companies involved in outdoor recreation have a valuable role in improving community access to public land and they may also contribute to the economy of the local region. Moreover, they may provide hire equipment, transport, skilled instruction, and interpretation of the environment in which the activity takes place, and set models for appropriate codes of conduct.

Organised activities may involve frequent use, or large numbers of people - both participants and, for competitive events, spectators. This may lead to overcrowding of some areas, localised environmental impacts at regularly used sites, and demands for exclusive access to particular venues - a demand Council believes in general to be inappropriate.

Several operators have been granted permits for commercial adventure tours within the public land of Melbourne Area, District 2. The tours offered cover a wide range of activity and may be for one day, a week-end, or up to a week.

The impact of commercial tours or similarly structured activities on natural systems, and their compatibility with other user groups, is not necessarily different to any other forms of similar recreational use. Impacts are associated rather with the size of the groups, frequency of use, and the behaviour of individuals.

Codes of practice for recreational activities

Many recreational organisations have developed, and encouraged their members to follow voluntary codes of practice. Codes outline socially and environmentally responsible behaviour, beyond that simply required by regulations. Codes provide for the maintenance of the resource on which the recreational activity depends, harmony with those following the same or different recreational activities, or other users of the area. Codes also assist other users to understand the way some recreational activities are pursued. The success of codes is measured by the extent to which they are followed, so they need to be regularly promoted. In general only a small proportion of those following a recreational activity belong to a formal recreational organisation, so codes need to be widely promoted to ensure all participants are reached.

Providing for a range of recreational experiences

Outdoor recreation activities are undertaken in a variety of settings which vary according to the level of access, facilities, use, and management. Settings reflect the physical, biological, social and management features of an area. Camping, for example, takes different forms in various settings, from readily accessible highly developed camp-grounds accommodating large numbers of people, through designated camp sites with few facilities, to remote areas without facilities. Some activities may also have specific physical or environmental, including seasonal, requirements such as swimming, caving, and skiing. Few forms of recreational activity are totally dependant on a single setting, although many are considerably enhanced by a particular one.

The factors interacting to form the settings for recreation experiences in turn determine the range of recreation opportunities available. These concepts have led to the planning method known as the 'Recreation Opportunity Spectrum' which is used, together with other recreation planning techniques, by managers to assist in identifying and managing impacts of proposals.

Although it may be desirable to provide for all appropriate recreation activities across the full range of settings, the nature of the land and population of a region mean that not all settings can be provided in all areas.

Developed settings providing large camping or picnic areas and catering for high levels of use are often on municipal or private land. Few areas contain remote recreation settings, even on public land, and there is a trend for activities to encroach into them.

In some cases recreation may be a primary use of public land; where it is a subsidiary use then it should be allowed where it can be accommodated without detriment to the other values, in accordance with the following recommendations.

RECREATION

Recommendations

J14 That:

- (i) public land continue to be available for a wide range of recreational uses
 - (ii) the type, intensity and patterns of recreational use:
 - (a) not exceed the capability of particular areas to sustain that use
 - (b) not conflict with the primary management aim of the respective area
 - (iii) planning ensure:
 - (a) a range of recreational settings is maintained
 - (b) special attention is given to the cumulative impact of small changes that may affect recreational settings
 - (c) compatibility of recreational activities is considered
 - (d) that use by large groups, whether private, commercial, or institutional, is consistent with (i), (ii), and (iii) (a) to (c) above
 - (iv) codes of practice be developed by the management authority in conjunction with appropriate groups, and that they be widely distributed and promoted to encourage responsible recreational use
 - (v) to facilitate planning, key recreational groups be encouraged to assist the development of methods that identify:
 - (a) the significance of recreational resources
 - (b) the impacts that may result from the use of that resource
 - (c) the management options that reduce these impacts
 - (vi) community awareness and appropriate use of recreational resources be encouraged through the preparation and publication of information about these resources
 - (vii) vehicular use of roads within the meaning of the *Land Conservation (Vehicle Control) Regulations 1972* continue to be permitted on public land except where closure is necessary because of erodible soils, seasonal conditions, excessive maintenance, or conflict with the primary use of the area
- and that
- (viii) land managers endeavour to provide some areas (for example disused gravel pits) for off-road vehicular use on land under their control.

(continued)

J14 - Recreation (continued)

Notes:

1. Relevant peak recreation groups and the Department of Arts, Sport and Tourism should be involved in the planning process, in the preparation of codes of practice, and in the dissemination of educational material.
2. The development of codes is not considered a substitute for the routine enforcement of existing regulations controlling (for example) littering, firearm use, pets or unseemly behaviour.

Recreation areas

J15 That the areas listed in Appendix VIII(i) (some of which are indicated on the maps) be used in accordance with the general recommendations for Community Use Areas outlined above and for organised sports (team sports, horse-racing, golf etc) and informal recreation (picnicking, camping etc) as permitted by the land manager

and that

- (iv) where specified, existing use as a rifle, pistol or clay target range, or for other shooting sport may continue
- (v) indigenous vegetation be conserved where possible
- (vi) grazing be permitted at the discretion of the land manager.

Recreation trails

J16 That the recreation trails referred to above be used in accordance with the general recommendations for Community Use Areas outlined above for walking, horse-riding and cycling as appropriate and as permitted by the land manager

and that

- (iv) the guidelines in Appendix VII for management of areas adjoining the Alpine Walking Track be applied
- (v)
 - (a) the Department of Conservation and Natural Resources investigate and determine the feasibility of a Hume and Hovell Trail, to eventually link with the New South Wales section
 - (b) the most appropriate route and associated stopping points be determined following consultation with interested groups including local municipalities and adjoining landowners (see Note).

Note:

The identified Hume and Hovell trail need not follow the exact route taken by the explorers. Instead, nearby road reserves, stream frontages and other public land could be used.

Disused railways

Several disused railway lines in this region have high capability for recreation. Of particular note is the Lilydale to Warburton railway reserve, with recreation use also being a primary value of the Erica section of the Moe

to Walhalla railway and, in a special sense, the Baxter to Mornington and Coldstream to Healesville lines. Another disused railway, the Bittern to Red Hill South branch line, has been mostly purchased by the Shire of Hastings who manage it primarily for passive forms of recreation. Other disused railways may also

have recreational value, including those recommended as historic and cultural features reserves (see Chapter F) and some of those

recommended as uncategorised public land pending the application of a detailed public planning process (see Chapter N).

Disused railways

Recommendations

J17-J20 That the areas described below be used in accordance with the general recommendations for Community Use Areas outlined above and for informal recreation (walking, cycling, horse riding, etc) as permitted by the land manager and/or for use as a recreational railway

that

(iv) the track formation, embankments, bridges, and other remnant features of the former railway be retained wherever possible

(v) indigenous vegetation be conserved where possible

(vi) grazing be permitted at the discretion of the land manager and, where relevant, appropriate access across the reserve be provided for movement of stock

and that those utilised for tourist railways be retained as public land.

J17 Lilydale to Warburton railway reserve (185 ha)

This railway was declared surplus to operational needs in 1984 (having been closed in 1964) and, following strong community representations, it was agreed that those parts required for recreational use and development be transferred to and managed by the Department of Conservation, and Natural Resources. A planning process was subsequently established, which involved extensive public consultation and culminated in the approval of a management plan in 1988. This provides for recreational use to be the primary purpose of the reserve.

The reserve has high capability for walking, cycling, and horse-riding. Its average width is 40 metres and it extends some 38km. The line passes through the rapidly developing townships of the Upper Yarra Valley as well as tracts of undulating and floodplain farmland. Some sections of the reserve retain indigenous vegetation in good condition.

Notes:

1. This railway reserve contains a number of sections of native grassland communities that will require active management.
2. The former Yarra Junction railway station has been included in a separate historic and cultural features reserve - (see Chapter F).

J18 Erica section of the Moe to Walhalla line

The few remaining parts of this railway reserve, together with adjoining public land, provide a link between the Erica town centre and the railway corridor through adjoining State forest to the Thomson River and the Walhalla Historic Area and township. These more easterly sections of the former line have, in parts, been developed for walking access and are already receiving a significant level of use.

J19 Baxter to Mornington branch line

The Mornington Station Ground was sold after this branch line was closed. The remainder of the line is being developed by the Mornington Preservation Society, a community-based group which operates from a station yard and workshop at the former Moorooduc Station. It is proposed for use as a tourist railway.

J20 Coldstream to Healesville line

This line was closed to service but retains its track and has been redeveloped as the Yarra Valley Tourist Railway. The community based group running this railway operates a motorised trolley service between Healesville and Yarra Glen and is based at the former Healesville station ground.

Emerald (Puffing Billy) Railway (see Recommendation F4)

PARKLANDS AND GARDENS

Victoria has a long tradition of establishing formal parklands and gardens. Many have been developed by local communities who have strong attachments to such areas. Some have been developed as formal botanical gardens, while others are private gardens that have been acquired by the Crown. Ornamental plantations and arboreta have also been developed.

While all such areas provide opportunities for informal and passive forms of recreation, many also have important landscape, historic, and aesthetic values.

The Dandenong Ranges include a number of gardens and arboreta of particular interest. By

the turn of the Century the Dandenong Ranges was a place the wealthy retreated to, to escape the summer heat of the Melbourne plains. Formal gardens were often an integral part of the grounds, but they were very expensive to maintain and many have now been subdivided and replaced by urban development, or burnt out in bushfires. Remnants of this era continue, however, and smaller gardens have been established. Several of these gardens are now within the public land estate - in particular the George Tindale Memorial, Pirianda, National Rhododendron and Alfred Nicholas Memorial Gardens, and Ferny Creek Horticultural Society Reserve - and are open to the public.

Parklands and gardens

Recommendations

J21 That the areas listed below in Table 20 below (some of which are indicated on the maps), be used in accordance with the general recommendations for Community Use Areas outlined above, and as gardens, community parkland or ornamental plantations

and that

- (iv) the conservation, scientific, educational and historical values of botanic gardens be protected
- (v) they be available for public use for passive open space recreation, appreciation and education, as determined by the land manager.

Note:

Where these retain indigenous vegetation it should be protected.

Cranbourne Royal Botanic Gardens annex (334 ha)

This area south of Cranbourne was selected as the site for an extensive native flora gardens, managed in conjunction with the Royal Botanic Gardens. It contains a 200 ha 'bushland sanctuary' of remnant vegetation, with extensive, representative and relatively undisturbed examples of *Eucalyptus radiata* coastal grassy forest, *Leptospermum myrsinoides*/E. *pryoriana* sand heathland, *Melaleuca squarrosa*/Gahnia *sieberana* wet heathland and *Leptospermum juniperinum* swamp sedgeland.

Other zones in the annex are: an arboretum of about 100 ha, being established on former farmland along the southern boundary; a landscaped 30 ha botanic garden of native but not indigenous species, being established

on an area mined for sand in the north-west; and 10 ha with a 'special collection' of selected native (but not indigenous) species (eg Proteas) on a sand-mined area adjacent to the arboretum.

The vegetated sections contain some 84 species considered as 'rare' in the Melbourne or Western Port areas. Three wetlands in the annex were recently assessed as significant. The endangered New Holland mouse may still be present here, and the painted honeyeater and grey goshawk have been recorded.

One possible route of a proposed four-lane Cranbourne bypass road is along the unmade Ballarto Road reserve, inside the northern boundary of the annex. The Council's view is that it would be inappropriate if this road were to be constructed through the Gardens area.

Table 20

PARKLANDS AND GARDENS

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
T ALEXANDRA	CA 3 SEC 21A	6.48	P MONBULK	CA 14B SEC G	13.30
T ALEXANDRA	CA 5A SEC 65A	0.73	Note: The indigenous vegetation of this area and its value as a wildlife link should be maintained.		
T ALEXANDRA	CA 8C SEC 65A	0.08	T MORNINGTON	CA 2A,2B SEC 5	0.41
T CRANBOURNE	PART CA 4 SEC 4	0.02	P NEERIM	CA 9B	1.00
T DIAMOND CREEK	CA 2 SEC 10	0.29	P NEERIM	CA 175C	0.10
T DROMANA	CA 1,3 SEC 1A	1.08	T NOOJEE	CA 17,18 SEC 3;	2.05
T DROUIN	CA 22,23,24 SEC 12	0.50		CA 24,25 SEC 1	
P DROUIN WEST	CA 86A	0.31	P SCORESBY	PART CA 72F	0.09
P EILDON	CA 5F	1.28	T SEVILLE	CA 30A	0.56
P EILDON	CA 5D	2.66	T SEYMOUR	CA 28D SEC W	1.04
T ELTHAM	ADJ CA 9-15 NO SEC	4.86	T SEYMOUR	CA 5,6,7,8 SEC V	13.42
T HEALESVILLE	CA 2 SEC 7	3.81	T SORRENTO	CA 11 SEC 2	4.35
T JAMIESON	CA 1A SEC 11	0.06	T TRAFALGAR	CA 16 SEC 11	0.98
P KEELBUNDORA	CA 16G	2.51	T WONTHAGGI	CA 4A SEC 117	0.30
T KORUMBURRA	CA 6 SEC L	0.10	T WONTHAGGI	CA 36 SEC 117	1.95
T KORUMBURRA	PART CA 49,49A SEC	6.00	T WONTHAGGI	CA 19 SEC 66;	0.49
T KORUMBURRA	CA 26 SEC Q	1.00		CA 20 SEC 66	
T KORUMBURRA	PART CA 45 SEC R	7.76	T WONTHAGGI	CA 17 SEC 47	0.55
T KORUMBURRA	CA 6 SEC L	0.10	T WONTHAGGI	CA 5A SEC 20	0.34
P LANGWARRIN	CA 2A,2B	1.60	T WONTHAGGI	CA 3 SEC 7	0.31
T LILYDALE	CA 11 SEC 10	1.48	T WONTHAGGI	CA 19 SEC 9	0.25
P MONBULK	CA 33 SEC G	2.40	T WONTHAGGI	CA 10 SEC 3B	3.97
P MONBULK	CA 2B,2C SEC G	11.92	T WONTHAGGI	CA 6 7 8 SEC 32	0.32
P MONBULK	CA 38,39 SEC C	7.97	T YARRAGON	CA 26 SEC 10	0.49
			T YEA	CA 12,12A SEC 14	0.43

Cranbourne Royal Botanic Gardens annex

Recommendation

J22 That the Cranbourne Botanic Gardens be used in accordance with the general recommendations for Community Use Areas outlined above

and to

- (iv) conserve and protect the indigenous plant and animal communities in the bushland sanctuary area
 - (v) protect the Gardens' scientific and educational values
 - (vi) provide for nature observation and appreciation, and passive recreation, as determined by the managers
- and that they continue to be managed by the Royal Botanic Gardens Board.

Note:

It would be inappropriate to route the proposed Cranbourne bypass road through the Gardens.

Healesville Sanctuary (31 ha)

The Sir Colin MacKenzie Zoological Park - Healesville Sanctuary - has an important and established role in providing the opportunity to view Australia's unique fauna, for Victorians

and many visitors. It also provides major educational and recreational services associated with the faunal displays, and carries out research and conservation programs, in particular the captive breeding programs for several endangered species.

Healesville Sanctuary

Recommendation

J23 That the Healesville Sanctuary be used in accordance with the general recommendations for Community Use Areas above that

- (iv) it be available for public use for passive recreation, appreciation and education, where appropriate and as determined by the managers

and that it continue to be managed by the Zoological Board of Victoria.

Note:

This area includes Lake Corranderrk and the adjoining plantations of trees used to feed the Sanctuary's koala population.

BUILDINGS IN PUBLIC USE

Public buildings are used for a wide range of community uses, including education, recreation, and tourism. They may have a single purpose, such as for museums or libraries, or multi-purposes such as public halls and schools which have various associated facilities and are increasingly used by the community. These buildings are distinguished from those used as public offices (and categorised as Services and Utilities) by their use by a cross-section of the community, whereas public offices are largely used by the employees of departments or authorities.

Many older buildings such as Mechanics Institutes and Court Houses may now be utilised for other public uses. They may be a focus for community activities, such as shows, dances and markets. In addition to such buildings having value as venues for other activities, many have historic or aesthetic values in their own right. Those public buildings with the most significant historic values have been included as historic and cultural features reserves - (see Chapter F).

Public buildings are often managed by committees and may be sub-let to particular groups on a commercial or semi-commercial basis. As community needs change over time, buildings or sites no longer used for their original primary purpose should be assessed for their cultural heritage values and capabilities for other community or public uses. In some instances it may be appropriate to consider their reclassification.

Buildings in public use

Recommendation

J24 That the buildings listed in Appendix VIII(ii) (some of which are indicated on the maps) and their surrounding sites be used in accordance with the general recommendations for Community Use Areas outlined above, and for schools, public halls, kindergartens, libraries, museums, galleries, war memorials, tourist facilities or other public uses that

- (iv) should a building or site no longer be required for its primary designated use, it be assessed for its cultural heritage values and capability for other public uses, as part of the process of consideration for re-classification outlined in Chapter N

and that they continue to be managed by the relevant department or agency.

K. FOREST PLANTATIONS

HARDWOOD PLANTATIONS

The Timber Industry Strategy (TIS) in 1986 discussed the environmental value of reforestation programs. The Strategy noted that the establishment of native hardwood plantations on cleared land in strategic locations by both the government and private industry was of particular interest. Management of the plantations would be for intensive wood production, with the purpose of relieving pressure on native forests for wood production.

Victoria's State hardwood plantations currently total about 10 840 ha. Few hardwood plantations are located on State forest in the study area. APM Forests Pty Ltd (a subsidiary of Australian Paper Manufacturers) owns and leases extensive areas for hardwood plantations outside the study area in the Strzelecki Ranges and near Maryvale.

APM considers that few areas of freehold land that are technically suitable for ash eucalypt plantations can be found in Victoria. Most of the suitable land in the State is public land where restrictions on the clearing of native vegetation inhibit the development of plantations.

SOFTWOOD PLANTATIONS

Victoria's softwood plantation estate covers some 226 400 ha, comprising about 109 400 ha of State plantations and some 117 000 ha of private. About 1800 ha of the State softwood plantations were established under the School Endowment Plantation Scheme.

Victoria has the highest level of private investment in plantations in Australia, representing about 48% of the total area; compared with the national average of 28% under private ownership. About 72% of the private plantations in the State are owned by three companies. The largest holding is by APM Forests Pty Ltd in central and south Gippsland, and amounts to some 42 000 ha.

Sawlog supplies from State plantations are expected to double in the next ten years and to treble within 30 years.

Chapter E - Timber Production and State Forest - discusses the expansion of softwood

timbers into the traditional markets of hardwood sawn timber and the respective roles of both hardwoods and softwoods in the future of the timber industry in general.

Eight Softwood Sawlog Management Areas have been identified in the State. Three, Latrobe, Benalla/Mansfield, and Central, overlap with the study area.

On the basis that there are insufficient resources to enable the expansion of all plantation areas to sizes sufficient for each to support large integrated industries, the TIS identified plantation establishment targets for each of the Softwood Management Areas. The aim was to concentrate plantation establishment in areas where a minimum of planting would support large scale integrated industries and where the government has commitments to supply wood under legislative agreements, and to consolidate smaller scale plantation projects to a size suitable to supply a viable sawmilling and timber preservation industry. The impact of that strategy was to consolidate future plantation establishment in the north-east of the State and the Latrobe Valley.

Table 21 indicates the extent of softwood plantations in the study area.

Under the TIS, the plantations in the Central Management Area would remain at the current area of about 4900 ha for the supply of sawlogs. On its own, this area is insufficient for a large-scale sawmilling industry.

Similarly, the plantations beside the Delatite Arm of Lake Eildon will not be expanded. They form part of the consolidated Benalla/Mansfield - Ovens - Upper Murray Management Areas. This consolidation is designed to provide increasing supplies of raw materials for large, internationally competitive industries embracing pulp mills, particleboard plants, sawlog and veneer mills, and preservation plants.

The major industries currently based on this resource include an integrated pulp mill and sawmilling complex at Myrtleford (Australian Forest Industries - a division of Bowater-Scott Australia Ltd), a pulp mill at Albury (Australian Newsprint Mills Ltd), and a particleboard plant at Benalla (Monsbent Pty

Table 21

SOFTWOOD PLANTATION AREAS
(Melbourne Area, District 2)

Location	Net Area (ha)	Period planted	Management Area
Eildon (Delatite Arm)	1 932	1959 - 1968	Benalla/Mansfield
Kinglake West	1 116	1970s	Central
Buxton, Taggerty and Narbethong	3 714	1970s	Central
Loch Valley	989	1960 - present	LaTrobe
Neerim East and Shady Creek	1 202	1972 - 1985	LaTrobe
Moondarra	621	1969 - 1973	LaTrobe
Allambee	568	1975 - present	LaTrobe
Total	10 142		

Notes:

- 1 These areas represent 14%, 100%, and 13% of the government's target plantation area for the Latrobe, Central, and Benalla/Mansfield Management Areas, respectively.
- 2 These areas refer only to those plantations within the study area. Additional State plantations are located nearby within the Rural City of Warragul and in the Latrobe Valley to the east.
- 3 Not included in the figures is a small area at Narbethong which will be returned to native vegetation following harvesting of the pines.

Source: Forest Resources Information and Yield Regulation, No10 - Plantation Area Statement; DCNR

Ltd). Supplies of materials to these companies are by long-term agreement. The complex at Myrtleford draws some softwood sawlogs and veneer logs from the Delatite area.

The TIS noted that additional areas of softwood plantation in the Latrobe Management Area will provide part of the raw material for a major expansion of pulp and paper making by APM and the sawmilling industry in the Latrobe Valley. The *Forests (Wood Pulp Agreements) Act 1974* guarantees APM increasing supplies reaching 100 000 cu.m per year in 1999/2000. In the 1991/92 period, some 69 000 cu.m of the total of 695 000 cu.m of pine pulpwood received by the Maryvale pulpmill was supplied from State plantations.

The State's plantation resource is intended to complement the large private plantation resources in the Latrobe Valley and together, ensure wood flows to allow the integrated industries to operate at internationally competitive levels.

The State softwood plantation resource in the study area contributes to the sustainable yield of softwood timber from the Latrobe and Benalla/Mansfield Management Areas.

Under the TIS, the aims of management for State softwood plantations are to optimise the

financial return to Victoria and to ensure that the plantations are capable of sustaining supplies to competitive and integrated forest products industries.

Periodic thinning of plantations to remove weaker and poorly formed trees maximises the production of veneer logs and sawlogs. Trees felled in the thinning operations may be used to produce small sawlogs, fencing timbers and other products that utilise roundwood, and pulpwood.

A sustainable yield of produce is calculated for each Management Area, taking into account such factors as age-class distribution, growth rates, and site quality. This yield is then used to determine the level at which licences to supply produce are set.

As well as timber production many plantations have other important uses:

- * A substantial part of the Narbethong plantation is managed to demonstrate the growth potential of a range of exotic coniferous species. This plantation also includes popular picnic sites.
- * Many camping facilities have been provided throughout the plantation beside the Delatite Arm of Lake Eildon and are

in very heavy demand throughout summer. This plantation and the adjacent native forests of Eildon State Park provides settings for considerable recreational opportunities, mostly water-based.

- * Some of the plantations are heavily used for such activities as trail-bike riding along roads and formed tracks.

A few timber processors use softwood timber produced within the study area and have processing plants located within it. The sawmills located at Narbethong and Crossover are examples.

Plantations within the study area provide a small proportion of the requirements for large industrial developments producing a wide range of timber products at locations which include Benalla, Myrtleford, and Albury and in the Latrobe Valley.

Some areas recommended by the Council for softwood plantation establishment in 1977 have not yet been planted. These are located at Mount Robertson (Kinglake), in the Acheron Valley, and at Mount Carmel near Moe. More recent information indicates that the land at Mount Robertson is, at best, marginal for softwood production and should not be used for that purpose. It now appears that the additional softwood plantations in the Acheron Valley are no longer required.

In 1982, at the request of the government, the Council conducted a special investigation of the Hill End area in order to make recommendations on the best use of the land, including the extent to which it might be used to fulfil the government's commitments to increased softwood establishment and to replacement of land acquired from APM.

Subsequently, in 1983, the Council recommended that some 1410 ha net at Harold Creek, 1480 ha net at Good Hope Creek, and 780 ha net at Serpentine Creek could be used for softwood plantation establishment if the government decided that forested public land should be available for that purpose.

Following the change of government in 1982, the policy with respect to using forested public land for softwood plantations was changed so that no further areas of public land carrying native forest were available for softwood production. The result was that the Council's recommendations for additional plantations on

public land in the Hill End area were not accepted and the land still remains under native forest.

As an alternative to using forested public land, the government was exploring strategies whereby softwood supply commitments may be met by plantations developed by private companies on freehold land, private farm forestry (through the introduction of a Plantation Sharefarming Scheme), and the purchase of suitable land by the State for plantation purposes. The Council supports such proposals in appropriate areas.

In the years following those recommendations emphasis on the establishment of new plantations, particularly in the Latrobe Region, has changed from softwood to hardwood. This has occurred largely because APM is using an increasing amount of hardwood pulp in its paper making processes.

The present government announced that it intends to establish the Victorian Plantations Corporation to undertake the management of public plantations and to evaluate their potential for disposal. Management options may include some or all of the following:

- * franchising of wood production and marketing functions to individual private operators
- * greater use of contract services for components of these functions to individual operators

and/or

- * leasing of specific plantations
- * disposal where appropriate.

Plantation Planting Guidelines

The Council believes that the impact of large plantations of softwood have on the natural environment can be reduced by retaining selected areas of native vegetation and by adhering to catchment prescriptions.

The Code of Forest Practices for Timber Production (which currently applies to all public land in the State and is proposed to apply to private land used for commercial timber production) notes that native forest must not be cleared to provide land for State softwood plantations and that their design must take into account the following:

- * Existing riparian and other native vegetation within a minimum distance of 20 m from permanent streams, swamps, and bodies of standing water must be retained. Where previous clearing has extended to the banks of permanent streams, a strip of species native to the area should be established taking care to minimise land disturbance, or allowed to regenerate to ensure adequate stream protection, except where the Forest Management Plan allows alternative species to be planted.
- * New plantations must be confined to areas with ground slopes generally less than 30°, with lower slope limits being applied in areas of high erosion hazard. Where existing plantations are growing on slopes greater than 30° they may be replanted with commercial plantation species where soils are stable and erosion hazard is low.
- * Sites on public land known to contain significant populations of rare or endangered species or vegetation types, and other areas of conservation significance together with an appropriate reserved strip around the site, must be excluded from planting.
- * Strategic areas may be designated to be maintained as cleared fire breaks.
- * Boundary margins must be retained as prescribed for State forest by the Department of Conservation and Natural Resources or by planning provisions for other land.
- * Landscape values must be maintained on public land where careful assessment and planning has identified areas of high landscape sensitivity.

Other sections of the Code provide for environmental protection during harvesting operations.

In its Recommendations in 1977, the Council noted that the establishment of softwood plantations constitutes a major change from any natural ecosystem that they replace. Adjacent areas of vegetated public land that have high nature conservation and/or landscape values therefore play an important role in maintaining local balance in land use. These areas are also important for protecting the softwood resource from fire. Accordingly, the Council designated these areas as "forest area".

Forest areas could be used for:

- * conservation of fauna and flora and the preservation of scenic values
- * protection of the adjacent area of softwood plantation
- * low-intensity hardwood production, recreation, education, forest grazing, honey production, and mining, where these activities do not conflict with conservation and preservation of natural and scenic values
- * protection of water supply and catchment areas.

The uses of forest areas differ little from those of State forest in general, particularly those areas of State forest which are not highly timber productive. Accordingly, in these recommendations, the Council has included the previously recommended forest areas within the broader category of State forest (see Chapter E).

SOFTWOOD PLANTATIONS

Recommendations

K1 That the present softwood plantations, indicated on Map A, continue to be used for the production of softwood products and the provision of other goods and services compatible with the primary use, as well as providing opportunities for education and recreation.

Note: A small area of existing softwood plantation at Narbethong is to be returned to native vegetation following harvesting.

K2 That the land at Mount Robertson and in the Acheron Valley (Central Management Area), and at Mount Carmel (Latrobe Management Area), recommended for softwood production in 1977 in the Final Recommendations for the Melbourne Area, but not yet planted, be State forest and not be used for softwood production.

(continued)

Softwood Plantations (continued)

K3 That the land at Harold Creek, Good Hope Creek and Serpentine Creek (Latrobe Management Area) recommended for softwood production in 1983 in the Final Recommendations following the Hill End Special Investigation, be State forest and not be used for softwood production.

Anderson Creek - land for agriculture or forestry

In August 1986, the Council was directed to investigate land surplus to State Electricity Commission (SEC) purposes and certain areas of uncommitted public land in the Latrobe Valley. Part of the area covered by the Latrobe Valley Special Investigation fell within land now within the Melbourne Area, District 2.

The ensuing Final Recommendations (published in October 1987) included provision for possible softwood plantations on some 1470 ha of land at Anderson Creek within the Parish of Tanjil East which the SEC identified as not currently required, but will be required for coal-related development in the future.

The Council's recommendation for this area, accepted by the government, included that:

- * it be available for agriculture or forestry under lease from the SEC until required for coal-related development
- * softwood plantations not be established on the land unless there is a reasonable expectation that it will not be required for coal-related development for at least 15 years following expiration of then-existing leases
- * the land not be considered for softwood plantations until following expiration of the then-existing leases.

Anderson Creek

Recommendation

K4 That the area of 1470 ha at Anderson Creek, indicated on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the Latrobe Valley Special Investigation in 1987.

Notes:

1. See also Recommendation O2
2. The site of the proposed Anderson Creek overburden dump is in this vicinity.
3. In the event that softwoods are planted here, the SEC will determine the appropriate fire protection measures in consultation with the Department of Conservation and Natural Resources.
4. Land overlying the Esso-BHP oil pipelines and the Gas and Fuel Corporation natural gas pipeline, which pass through here, should not be planted to softwoods.

SCHOOL PLANTATIONS

Throughout the study area, numerous areas of public land have been set aside as school endowment plantations as part of various school's educational resources. The plantations were initially established to instil, through community involvement, a love of forests and an appreciation of their value. Many of them are well suited for regular use as a teaching resource of this nature. It is expected that this use will increase as courses embracing various aspects of environmental science are developed.

Many school plantations are of radiata pine, and are used by the schools to provide

amenities through revenue raised from the sale of produce. In some cases these plantations have not been very successful in providing revenue, as the sites proved unsuitable for economic growth, the plantations were too small, or the location too far from processing centres to allow economic harvesting. In some instances, radiata pine plantations have failed because of poor management.

Council believes that all the existing school plantations should be assessed in order to establish their value as a teaching resource. Those that are not now needed or that are unsuitable for teaching purposes for some reason, such as their location, should be terminated. Those planted to radiata pine that

have limited value as a teaching resource although satisfactory for wood production may continue to be used for such production, but should be reviewed when the pines are harvested.

Unused sand or gravel pits, or cleared areas such as former school sites, require

rehabilitation or revegetation. Council considers that, in some instances, such areas could be used as school plantations. Their rehabilitation not only could be used to demonstrate various aspects of environmental science but also could provide an opportunity to involve pupils in projects that are clearly in the public interest.

School plantations

Recommendations

K5 That areas set aside for school plantations be primarily used as a teaching resource and utilised to foster awareness and knowledge of the trees and other living organisms that comprise a forest.

Note:

This recommendation does not exclude the use of school plantations as a means of raising revenue for schools. Such use, however, should be secondary to the educational use.

K6 That the value of each existing school plantation as a teaching resource or for revenue production be assessed by the Department of Education - in consultation with the Department of Conservation and Natural Resources

and that the use of those considered unsuitable or no longer required be terminated.

K7 That new school plantations only be established on public land for educational purposes and where their establishment allows the rehabilitation or reforestation of cleared or eroded areas.

L. EARTH RESOURCES

During the development of its recommendations for the Wilderness Special Investigation (published in November 1991), the Council undertook a major review of its policy relating to the exploration and extraction of minerals, petroleum, groundwater, and stone. The Council considered that a review of its policy was timely, given the development of new legislation, changes to exploration and mining techniques, and changed community perceptions regarding the protection of significant conservation values.

For the purposes of discussion and these recommendations, the term 'mineral' has the same meaning as defined in the *Mineral Resources Development Act 1990*, that is:

'Any substance which occurs naturally as part of the earth's crust:
including

- (a) oil, shale, and coal and,
- (b) hydrocarbons and mineral oils contained in oil shale or coal or extracted from oil, shale or coal by chemical or industrial processes but excluding water, stone or petroleum.'

The Council's policy as described below, applies to minerals, petroleum, groundwater, and stone (including sand and gravel as defined in the *Extractive Industries Act 1966*) and for the purposes of this discussion are collectively referred to as 'earth resources'.

The significance of earth resources

Victoria has been, and continues to be an important source of a wide range of earth resources that generate wealth and prosperity for the State and upon which our modern society is dependent.

New supplies of these resources are needed to replace diminishing reserves from existing sources, and to supply additional resources and new materials to meet growing and changing market demand and changing technologies.

Although most of the outcropping and shallow deposits in Victoria have already been located, it is believed that there is considerable potential for further resources to be discovered.

Exploration effort is generally determined by a number of factors, economic (such as demand and expected returns) being the most important. These factors change, as do the theories of the formation of earth resources, in particular, minerals, and the techniques available for exploration. Because of this changing nature of exploration, the mining industry maintains that repeated access to land is required to enable refinement of the knowledge of Victoria's earth resources.

Public land in Victoria has made an important contribution to the provision of these commodities and is likely to continue to do so in the future. Accordingly, the Council adopted a number of principles, outlined below, with respect to exploration and extraction of earth resources.

Exploration and mining

A distinction is often made between activities associated with the exploration (or search) and mining (or commercial extraction) of earth resources. However, the Council has taken the view that exploration and mining activities can be considered together in the context of land use decision-making.

After considering all the issues and extensive discussions, the Council adopted the following principles:

- A. *Government has the responsibility to establish an inventory of the State's natural values. This includes geological information and the nature and extent of earth resources.*
- B. *Assessments directed towards increasing knowledge of the State's natural values would be permitted on virtually all public land. The methods of assessment used within a particular area of public land must be compatible with the purposes for which the land is set aside.*

The Council accepts that collection of information associated with knowledge, understanding, and assessment of resources and other environmental values could be permitted on all public land, including reference areas, wilderness areas and national and State parks, where the activities are of a non-disturbing

nature, such as remote sensing or limited survey work and are compatible with the primary purpose of reservation.

Hence, the Council's third principle is that:

- C. *Scientific research may take place in reference areas, wilderness areas, national and State parks, and marine parks and reserves under permit from the land manager, bearing in mind the need to protect identified values.*

Reference areas and wilderness areas

On the basis that activities should be compatible with the purposes for which an area is reserved, the Council took the view that activities associated with the extraction of minerals, stone, petroleum, and groundwater - that are likely to involve disturbance to the land surface, whether during extraction or subsequently (such as through subsidence of the surface), or that in other ways may affect natural values - would be incompatible with the protection of both reference areas and wilderness areas.

Accordingly:

- D. *Exploration with a view to the extraction of earth resources would not be permitted in reference and wilderness areas as such extraction is incompatible with the purpose of the reservation.*

National and State parks and marine parks and reserves

The *National Parks Act 1975* embodies the view that, although objective scientific research was an acceptable use of national and State parks, any activity that had the potential to conflict with the objectives of the Act should not be permitted. (The prohibition of mineral exploration in these parks and wilderness areas arose from the concern that activities under an exploration licence are usually undertaken with the expectation that mining would follow, should the area prove prospective for minerals.) Exploration and extraction of petroleum is permitted under the *National Parks Act 1975*.

Under current legislation, the reservation of a national, State or wilderness park, under the *National Parks Act 1975*, would mean that any minerals or stone there would become unavailable for exploration or extraction. It is the responsibility of government to decide if

legislation is to be amended to permit new exploration or extraction activities in these areas or to excise portion of a park to allow such activities. To vary the boundaries of a park or to change legislation to permit exploration or extraction of resources within a park would require public debate and a decision of Parliament.

Based solely on the type of scientific research that would be permitted in parks under these principles, the government would be unable to make a decision on mining. A realistic assessment of the viability of a mineral resource could only be achieved through more intensive exploration, which would probably involve drilling.

The Council therefore considers that:

- E. *Exploration for or extraction of earth resources should not be permitted in national or State parks or marine parks or marine reserves but, if scientific research indicates prospectivity for some mineral or other earth resource in one of these areas, and if there is a proposal, Parliament should determine whether detailed exploration or extraction would be permitted and whether a change in the classification of the affected land would be required.*

The Council recognises that this new policy, which differs from its earlier policy, is consistent with the existing legislation that excludes parks under Schedule 2 of the *National Parks Act 1975* from new exploration and mining of minerals and stone. It goes beyond the legislation by also exempting these parks from exploration or extraction under the *Petroleum Act 1958* and by excluding these activities from marine parks and marine reserves.

However, the Council considered that, if a proposal to explore or extract earth resources in one of these areas is raised in Parliament, the government could seek the view of the Land Conservation Council in relation to the prospectivity of the resource and the compatibility of exploration and extraction activities with the other values of the particular park or reserve.

The Council considers, however, that where the necessary information cannot be derived from adjoining areas, bores to establish regional groundwater flow patterns may be drilled adjacent to the existing track system

within parks - but not in reference or wilderness areas.

Nature conservation reserves

The Council expressed the view that exploration and extraction of earth resources should be excluded from flora and fauna and flora reserves but, should there be a proposal to explore or extract resources from one of these reserves, the government should be advised of the values of the area and of its context (usually being a small area surrounded by agricultural land) to ensure that these matters are taken into account in making a decision.

The Council considers that:

- F. *Exploration or extraction of earth resources should not be permitted in either flora or fauna and flora reserves (now nature conservation reserves) but, if scientific research indicates prospectivity for some mineral or other earth resource in one of these areas and if there is a proposal to explore or extract the resource, Parliament should determine whether detailed exploration or extraction would be permitted and whether a change in the classification of the affected land would be required. However, exploration or mining could be conducted from outside the boundaries of the reserve, provided that underground activities associated with further exploration or mining did not result in surface subsidence or significant changes to surface water-table levels within the reserve.*

Other public land

For the remaining categories of public land, listed below, the Council considers that all activities relating to the exploration and extraction of minerals, petroleum, stone, and groundwater should require the consent of the land manager. Currently, the consent of the respective land manager is required under the *Mineral Resources Development Act 1990* only for classes of land such as water supply catchment areas and land reserved under the *Crown Land (Reserves) Act 1978* and for land reserved under the *Forests Act 1958*.

- * regional parks
- * water production areas
- * State forest
- * historic and cultural features reserves

- * natural features reserves
- * coastal waters and coastal reserves
- * alpine resorts
- * community use areas
- * State plantations
- * service and utility reserves
- * uncategorised public land

Fossicking and prospecting

Fossicking and prospecting are often taken to mean the same thing. In mining terms a fossicker is a person who casually works over old mine workings and waste rock heaps in the hope of finding small amounts of gold or other minerals. Fossicking is also accepted as a wider term that embraces not only the search for gold and minerals, but also for other items such as bottles or coins.

Prospecting is generally a more systematic activity and is usually associated with the search for minerals, in particular, gold.

Under the *Mineral Resources Development Act 1990*, fossicking and prospecting for minerals are included in the definition of the 'search' for minerals and, as such, all those who carry it out are required to obtain a 'Miners Right'.

The holder of a Miners Right is entitled to search for minerals on Crown land except for those areas where searching and mining activity is prohibited. These areas include reference areas, wilderness, national parks, and State parks and other small areas of land specifically exempted, including community facilities such as sports grounds, cemeteries, and golf courses.

The holder of a Miners Right must not:

- (a) use any equipment for the purposes of excavation on the land, other than non-mechanical hand tools; or
- (b) use explosives on the land; or
- (c) remove or damage any tree or shrub on the land; or
- (d) disturb any Aboriginal place or Aboriginal object on the land;

and must repair any damage to the land arising out of the search.

Council considers that the search for minerals under a Miners Right is a legitimate activity and should be permitted on public land, other

than those areas where it is specifically excluded under the *Mineral Resources Development Act 1990*.

Principles and guidelines

Mineral exploration and extraction

1. All activities are to be carried out in accordance with the *Mineral Resources Development Act 1990* which sets out the mechanisms for tenement applications, development of work plans, necessary consultation, requirements for rehabilitation and, in the case of mineral exploration, a Code of Practice covering the exploration itself and the rehabilitation of sites.
2. When tenure is issued for operations under the *Mineral Resources Development Act 1990* on public land, the land manager should be consulted regarding the conditions to apply and the supervision should be in accordance with the agreed conditions as specified in the licence and with the requirements of the Act.

Exploration and extraction of stone

Materials covered by the definition of 'stone' in the *Extractive Industries Act 1966* (including rock, gravel, clay, sand, and soil) are widespread in the State. There is a strong community demand for new and better roads and buildings, and so for the materials necessary for their construction. Most of these materials are provided from private land, but public land is also an important source - particularly for road-making material and industry believes it could become more important in the future.

The Council is concerned by the complexity of legislation and procedures governing extraction of stone. (For example, the Roads Corporation and municipal councils are not bound by many provisions of the *Extractive Industries Act 1966*.)

The Council maintains that there is need for:

- * review of existing legislation and procedures to enable more rational use of the stone resources of the State
- * provision of adequate resources for the reclamation of old extraction sites on public land.

Poorly planned and located excavations can affect surrounding lands through noise, dust, unsightliness, and erosion and can diminish the value of the land. With care, however, these effects can be avoided or minimised.

3. Consultation should continue between the land manager, the Department of Energy and Minerals, and the other relevant authorities with respect to the procedures to be adopted for the exploration and extraction of stone on public land. Any operations on public land should continue to be subject to the approval of the land manager.

In all cases, the procedures that are established should apply to municipal councils, the Roads Corporation, and other public authorities as well as to commercial operators. To ensure this, the relevant Acts may have to be amended.

The Council endorses the system established under the *Extractive Industries Act 1966* that seeks to ensure that, before work commences, the availability of funds for progressive and final reclamation of any excavation or operation.

4. Provision should be made to enable acceleration of the rehabilitation of all existing extraction areas on public land.
5. Royalties for materials extracted from public land, including site rental when appropriate, must be more closely related to the market value of the material.

This would eliminate any temptation to use public land purely on the grounds of the nominal royalties sometimes levied in the past.

6. No sites for the extraction of stone should be opened in areas that the land manager, in consultation with the Department of Energy and Minerals, considers to be of greater value for other uses including aesthetic or nature conservation values. The advice of the Department should also be sought as to the desirability of proposed excavations, having regard to alternative sources of stone.
7. Extraction of stone should generally be concentrated on the fewest possible sites in an area, recognising the need for appropriate competition between suppliers. Depending on the quality and type of material, any one site should be

substantially worked out and where possible reclamation ensured before work commences at a new site. The type of excavation to be carried out should be that with the lowest environmental impact consistent with the effective use of the resource. In general, and where the nature of the resource permits, excavations for stone should be deep and limited in area in preference to shallow excavations over a wide area.

The extraction of granite sand occurring as shallow deposits in the weathered profile should be discouraged unless it has been established that no suitable alternatives are available. In the special circumstances where approval is given for this form of extraction, particular attention should be given to the prevention of soil erosion.

8. Where an application for the removal of stone from a stream-bed is considered, the land manager should take particular care to ensure that the operations will not directly or indirectly cause erosion of the bed or banks, or undue pollution of the stream. In addition to the arrangements outlined above for extraction of stone, the land manager should also consult with the relevant water supply and conservation authorities, and should consider the scenic and recreation values of the area.

Alternative sources with a lower environmental impact should be used where they are available. The environmental effect of extraction may be reduced if alluvial stone is obtained from properly managed quarries on the river terraces, rather than from the present stream-bed.

9. All extraction sites should be fully reclaimed where possible. Reclamation should follow extraction progressively when possible, but otherwise should begin immediately extraction is completed. The requirements for reclamation should continue to be included in the conditions of the lease or licence before any approval to extract is granted. The reclamation may include, for example, replacing topsoil, revegetating the site with plantation forest, allowing a quarry to fill with water and developing the site as a park, using a gravel pit for off-road vehicles, using a quarry for garbage disposal prior to reclamation, or restoring the site as closely as possible to its

original topography and revegetating it with species native to the site.

Exploration and extraction of groundwater and petroleum

10. On-ground works associated with the exploration and/or extraction of groundwater or petroleum should be referred to the land manager to determine whether such activities will impact on important environmental or cultural values and whether or not particular conditions are required to protect specific values.
11. All such sites are to be rehabilitated in accordance with a plan agreed upon by the land manager and the Department of Energy and Minerals.

In addition to the above, approval under the *Soil Conservation and Land Utilization Act* 1958 should continue to be sought for the exploration or extraction operations for minerals, petroleum, or stone, where the subject land is within a proclaimed water supply catchment.

Mineral prospectivity of the study area

Much of the study area is considered by the Department of Energy and Minerals to be prospective for mineralisation. Some hundreds of faults and lineaments have been identified from Landsat images and their intersections can be highly prospective for certain minerals.

Past goldfields, metamorphic aureoles (the adjoining granites acted as heat sources and gold and tungsten may have been mobilised and deposited in such areas), and areas with Paleozoic bedrock - which are considered to be potentially prospective for vein gold, all contribute to the area's prospectivity.

Except in granitic areas, Paleozoic bedrock underlies almost the entire State, although in some areas it is obscured by a cover of younger sediments or volcanic rock. Mesozoic and Cainozoic sediments overlying Paleozoic bedrock can provide potential stone resources and, where the thickness of these overlying sediments is not great, are also considered prospective for vein gold (because of the underlying bedrock).

Sand

For many years, Melbourne's principal source of building sand has been the

Heatherton/Dingley area, and this resource is nearing exhaustion. More recent supplies have come from the Cranbourne and Langwarrin areas which, although also being rapidly depleted, are likely to last for about ten years.

Most of the current supplies are derived from freehold land although urban expansion has resulted in some areas becoming unavailable, not necessarily because of exhaustion of the resource, but because of urban development of the supply area or restrictions arising from planning controls.

As transport costs are a significant component of the delivered price of the sand, a relatively close proximity of the resource to the Melbourne market is sought. New resources are therefore likely to be sought from further east and south-east of greater Melbourne.

Consequently the southern part of the study area is becoming the focus of interest and four main areas of potential supply have been identified: Gurdies/Grantville/Lang Lang, Inverloch/Ellerside, and north of Yarragon and Yallourn. Current extractive industry leases and/or applications exist at Grantville, The Gurdies, and Lang Lang. Most of the applications and existing extraction operations are located on freehold land.

Although the areas of interest encompass both public and freehold land, current tenements and applications focus on Crown land, probably because public land is considered to be more readily accessible than freehold land.

The Gurdies/Grantville/Lang Lang area covers some 18 400 ha, about 10% of which is public land. It is the closest to Melbourne and is subject to the most detailed resource assessments. The total resource is estimated at 330 Mt, equivalent to between 35 and 50 years' supply. Use of the resource here is constrained to some extent by planning controls, problems with a high watertable, and conflict with flora and fauna values.

Recommended by the Council in 1977 and ratified in these proposed recommendations, The Gurdies and Grantville fauna and flora reserves (see Recommendations C33 and C34 respectively), together with the adjoining stone reserves (Recommendation L7) cover the bulk of the public land in this vicinity.

The stone reserve in the Gurdies area is currently held under extractive industry licences; the upper batter slopes here are highly

visible and require rehabilitation. It is now proposed that the northern portion of the stone reserve at Grantville be included in a services and utilities reserve (see Chapter M).

For a parcel of public land overlying a sand resource between Lang Lang and Nyora, however, the Council in 1977 set aside portion as a stone reserve and the balance as 'uncommitted land' - land to be retained as public land and maintained to meet future demands.

Following review of the values of the public land at Lang Lang, including the location, nature and extent of the sand resource, the Council is now proposing that the western part of the area be reserved as a fauna and flora reserve (see Recommendation C49) and the balance as an earth resource reserve (Recommendation L8 below).

The resource here comprises a fine, high quality silica sand used for glass making. The area has been worked continuously since 1952 and an estimated 15 years' supply remains. The site includes buildings and a number of facilities for processing the sand. Areas of native vegetation have been retained within the area under extractive industry tenements, principally in the north. The land is being progressively rehabilitated and planted with indigenous species following extraction.

Land for coal related development

The Council's Final Recommendations for the South Gippsland Area, District 2 (1982) identified extensive areas to be managed by the State Electricity Commission for the production of brown coal and associated necessary developments. Where the land was not immediately required, the Council recommended that it be used to:

- * provide for existing uses and produce those goods and services required by the community, including agriculture and forestry, where this can be done without seriously reducing the long-term ability of the land to meet future demands for coal production and associated developments
- * maintain natural features of the land, where appropriate, until such time as it is required for the winning of brown coal and related activities

and

- * in view of the shortage of deposits of sand and gravels suitable for road-making and

general construction purposes in the Latrobe Valley, such deposits located within coal-production areas be worked where possible prior to development of the coal-fields.

This recommendation was approved by the government. A small portion of such land in the vicinity of Yallourn North extends into the Melbourne Area, District 2 (see Recommendation L9 below).

In 1986 the Land Conservation Council was requested to undertake a special investigation into the future use of certain lands in the Latrobe Valley. These areas included some

owned by the State Electricity Commission of Victoria (SEC) within the Melbourne Area, District 2, in the vicinity of Anderson Creek.

In its final recommendations following the Latrobe Valley Special Investigation, published in October 1987, the Council recommended that the bulk of the land owned by the SEC and required for the Anderson Creek overburden dump be available for agriculture or forestry under lease from the SEC, until required for coal-related development.

This matter is discussed in Chapters K - State Plantations and O - Land Not Required for Public Purposes.

EARTH RESOURCES

Recommendations

Policy recommendations

- L1** That exploration and extraction of earth resources (mineral, petroleum, stone, and groundwater) not be permitted in reference areas, wilderness areas, national parks, State parks or nature conservation reserves.
- L2** That, if scientific research indicates prospectivity for some mineral or other earth resource in a national park, State park, marine park, marine reserve, or nature conservation reserve, and if there is a proposal to undertake work, Parliament should determine whether detailed exploration or extraction would be permitted and whether a change in the classification of the affected land would be required.
- L3** That access for exploration and mining of earth resources be permitted from outside the boundaries of nature conservation reserves, provided that underground activities associated with further exploration or mining do not result in surface subsidence or significant changes to near-surface watertable levels.
- L4** That bores required to establish regional groundwater flow patterns may be drilled adjacent to the existing track system within national parks and State parks, but not within reference areas or wilderness areas.
- L5** That exploration and extraction of earth resources be permitted in the remaining areas of public land, subject to the consent of the land manager and in accordance with the principles and guidelines outlined earlier in this chapter.
- L6** That the search for minerals under a Miners Right be permitted on public land in accordance with the provisions of the *Mineral Resources Development Act 1990*.

Note:

These provisions prohibit searching under a Miners Right in reference areas, wilderness areas, national parks, and State parks, as well as other areas specifically excluded under the *Crown Land (Reserves) Act 1978*.

Stone reserves

- L7** That the areas listed in Table 22, totalling 184 ha and shown on Map A, continue to be used for the extraction of stone in accordance with the principles and guidelines outlined in this chapter and, if not already reserved for this purpose, be temporarily reserved under Section 4 of the

Crown Land (Reserves) Act 1978, with management plans prepared by the Department of Conservation and Natural Resources.

Notes:

1. Road-making materials are extracted from many other areas of public land through the study area. As they are usually short-term surface workings they have not been indicated on the map accompanying these recommendations. However, such sites should be subject to the principles and guidelines outlined in this chapter, especially in relation to their rehabilitation.
2. Materials covered by the definition of 'stone' in the *Extractive Industries Act 1966* include rock, gravel, sand, clay, and soil.

Lang Lang sand extraction

L8 That the area of 250 ha shown on Map A continue to be used for the extraction of sand in accordance with the principles and guidelines outlined in this chapter and be temporarily reserved under Section 4 of the *Crown Land (Reserves) Act 1978*, with management plans prepared by the Department of Conservation and Natural Resources

and that

- (i) riparian and wetland plant communities be protected.

Land for coal related development

L9 That the area of 15 ha indicated on Map A continue to be used for those purposes approved by the government following publication of the final recommendations for the South Gippsland Area, District 2 in November 1982.

Table 22

STONE RESERVES

Parish (P) or Township (T)	Description	Area (ha)
P CORINELLA	CA 97B,97D	23.04
P CORINELLA	PART CA 187B	100.00
P GRACEDALE	CA 30B SEC 2	2.01
P HOWQUA WEST	CA 99G	0.50
P HOWQUA WEST	CA 99E	10.54
P KANGERONG	CA 7D	11.76
P KILLINGWORTH	CA 66B	0.75
P KOO-WEE-RUP EAST	CA 1A SEC M	2.50
P MAINTONGOON	CA 14B SEC A	10.52
P MOOROOLBARK	CA 33D	2.26
P NAR-NAR-GOON	CA 12B NO SEC	1.13
P NEERIM EAST	CA 47E	1.57
P WARBURTON	CA 209,209A	6.81
T WARBURTON	CA 113	4.72
P WOOLAMAI	CA 27M	5.89

M. SERVICES AND UTILITIES

Many services are provided on, and many utilities occupy, public land. They include: transport - roads, railways and ports; electricity and gas installations; communications and survey fixtures; municipal buildings and services; public offices, hospitals, police stations and courthouses; water supply and sewerage services; cemeteries; and other services and utilities.

These recommendations and the maps do not specifically identify many of the small areas used for these purposes as no change of use is proposed. It is intended that for such areas existing legal uses and tenure should continue.

In past investigations, Council has recommended several different categories for areas used for the services and utilities now referred to in this Chapter. Recommendations for roads were contained in 'Roadside Conservation'. Public land used for other services and utility purposes and reserved was in 'Utilities and Survey' category; if in townships but unreserved it was recommended as 'Township Land'; outside townships, unreserved land used for these purposes was categorised as 'Other Reserves and Public Land'; and water supply pipelines, aqueducts, treatment works etc were included under 'Water Production' recommendations. This Chapter aims at simplifying that complexity.

In the absence of firm planning proposals, accompanied by the necessary detailed information, it is not possible for the Council to provide for future requirements of land for services and utilities. The use of land for these purposes will be considered when the need arises.

Agencies concerned with provision and installation of facilities such as communications equipment, transmission lines, ports, pipelines, major water supply projects, or roads are requested to submit proposals involving occupation agreements or the setting aside of sites on public land to the appropriate land managers at an early planning stage. It is noted that many agencies are doing this. It assists in achieving co-ordinated planning, and perhaps avoids the necessity for costly resurveys.

Many public land areas used for services and utilities are reserved for their specific purpose, often temporarily, under the *Crown Land (Reserves) Act 1978*. In the following recommendations it is not proposed that these areas be permanently reserved, in contrast with other categories earlier in these recommendations. The nature of some of the services and utility uses is that they are temporary. In such cases, the recommendations below provide for each area's values to be assessed, prior to reclassification.

SERVICES AND UTILITIES

Recommendations

M1, M2, M4, M6-M19, M21 That, subject to any specific additional recommendations below:

- (i) existing reserves and easements used for public services and utilities continue to be used for those purposes
- (ii) new services or utility sites and easements or lines not be sited in or across reference or wilderness areas, and wherever possible not in or across national, State, regional or marine parks, marine reserves or nature conservation reserves
- (iii) should a public land area or building and site used for service or utility purposes no longer be required for its primary designated use, it be assessed for its natural, recreational and cultural heritage values, and capability for other public uses, as part of the process of consideration for reclassification outlined in Chapter N.

TRANSPORT

Roadside Conservation

The primary purpose of road reserves is obviously to provide for communication, transport, and access. However, vegetation along the road verges can have particularly high conservation, recreation, and landscape values, especially in agricultural districts where most of the native vegetation has been cleared. Geological features exposed in roadside cuttings are a useful adjunct to more detailed work involved in mapping the geology of an area and are often used as an educational resource.

Nature conservation

Vegetation on roads is important for nature conservation because in some parts of the State it often contains the only remnants of the region's indigenous plant associations. Such remnants are valuable for preserving species with restricted distribution and genetically interesting variants of more widespread species. They are often useful in land studies as they may permit the original pattern of the vegetation to be pieced together. They also provide habitat - particularly in tree hollows - for some native animals, and have special significance as corridors permitting birds to move through the countryside on annual migration, or in search of food or nesting sites. While some roads retain wide strips of native vegetation, many are mostly cleared or otherwise greatly altered. Valuable remnants of vegetation growing on the verges of some roads should be protected where possible. Of particular note is the vegetation along roadsides in the Seymour - Goulburn Valley, middle Yarra Valley and Mornington Peninsula areas. Often these open roads and road reserves contain the great majority of trees in the landscape.

The *Arthur Rylah Institute for Environmental Research, Technical Report Series No. 11*, September 1984, 'Conservation of Roadsides and Roadside Vegetation', gives a comprehensive review of values, methods of assessment, and management of roadsides for the purposes of nature conservation. A *Roadside Assessment Manual* (Scott 1990) explaining how to carry out roadside assessments has been prepared for the Roadsides Conservation Committee, which comprises representatives from various interest groups and government departments.

Accumulation of fuel along roadsides is a fire hazard of concern to fire-control authorities and in some areas is reduced by burning off during cool weather. This burning off sometimes conflicts with scenic and conservation values and the Council believes that such burning should be restricted to strategically important areas and kept to the minimum consistent with efficient fire protection. The Roadsides Conservation Committee has prepared a set of guidelines that provide for both conservation and fire protection.

Roadside trees can also play an important role in mitigating the effects and extent of dryland salting. These trees, the only remaining trees in some areas, play a vital part in the interception of saline subsurface moisture.

Recreation and landscape

In rural districts, vegetation along roads is often a major component of the landscape, breaking the monotony of cleared paddocks and accentuating the contours of the land. It provides a pleasant, variable road environment for motorists, and shady areas for rest and relaxation. The Council believes that as much roadside vegetation as possible should be retained when roads are being upgraded. If a major upgrading is being planned, the feasibility of purchasing a strip of private land should be considered in order to preserve good stands of roadside vegetation.

Management

Responsibility for the management of roadside vegetation is vested in various authorities, depending on the status of the road. The most important roads of the State (highways, tourist and forest roads, and freeways) declared under the *Transport Act* 1983 are completely under the control of the Roads Corporation (9000 km). Main roads (14 500 km) are also declared, but are controlled jointly by the Roads Corporation and local municipal councils. Vegetation on unclassified roads (about 98 000 km of mostly minor roads) is under the care and management of municipal councils, although it is owned by the Crown. The Department of Conservation and Natural Resources has the control of vegetation on unclassified roads that pass through or adjoin State forests. (Note: these figures are for all Victoria.)

Back roads

With increasing population and use of cars, a tendency has developed for through-roads in the study area to be continually upgraded. Tree-lined back roads with gravel surfaces on narrow alignments are becoming increasingly uncommon. Yet for many people such roads best fulfil their need for contact with rural environments. The Council believes that a conscious effort must be made to maintain the character of these roads, particularly when upgrading or realigning is being considered.

Road reserve management guidelines

Landscape, recreation, and conservation values can best be protected by observing the following guidelines. The Council recognises that many of these are already being implemented by the bodies responsible for the construction and maintenance of roads. The roads Corporation, for example, plants large numbers of trees adjoining their major works.

- * When improvements to a road are being carried out, trees and shrubs on the road reserve should be disturbed to the minimum extent consistent with the safe and efficient design and use of the road.
- * Major works to realign minor roads carrying trees and shrubs should not be undertaken unless clearly warranted by the nature and volume of the traffic carried, and the managers of adjacent public land should be consulted regarding such works.
- * Where re-alignment of a road results in a section of the old road being cut off, wherever possible that section should not be sold, but used as a recreation and rest area or incorporated into an adjacent appropriate reserve.
- * Where pipelines or overhead wires are to follow a road carrying trees and shrubs in a rural district, every effort should be made to locate the easements on private land alongside the road if this is already cleared, rather than clearing roadside vegetation to accommodate them.
- * While recognising the need for clearing or pruning vegetation close to power lines to reduce the associated fire risk, the State Electricity Commission should consult the Department of Conservation and Natural Resources regarding the manner in which the risk posed by vegetation can be reduced, while at the same time reducing the environmental impact to a minimum.
- * Road-making materials should not be taken from road reserves unless no suitable alternative sources are available. Any such removal should be done so as to ensure a minimum disturbance of the native vegetation, and the disturbed area should be rehabilitated, where possible with vegetation indigenous to the area.
- * Burning off, slashing, or clearing of roadside vegetation should be kept to a minimum consistent with providing adequate fire protection. In many cases appropriate works on adjoining freehold land can achieve the desired level of protection.
- * Weeds and vermin on roads should be controlled by means that do not conflict with the uses given above.
- * The various road management authorities, when planning to upgrade roads that have heavy recreational use, should give due consideration to recreational requirements, and give priority along such roads, when funds are available, to the development of roadside recreational facilities.
- * On soils of moderate to high erosion hazard, road management authorities should ensure that pre-planning, design, construction, and funding of roads cater adequately for erosion prevention and control. Advice should be sought from the Department of Conservation and Natural Resources.
- * The purchase of cleared freehold for road construction purposes should be considered as an alternative to clearing of stands of native vegetation in the road reserve.

Roads

Recommendation

- M1** That road reserves throughout the study area be used in accordance with the general recommendations for Services and Utilities outlined above for transport, communications, access, surveys and utilities

(continued)

M1 - Roads (continued)

and that the guidelines above be observed in order to protect roadside landscape, recreation and conservation values.

Note:

Eight municipalities in the study area are presently assessing the conservation values of roadsides within their respective shires. This assessment is being undertaken under the auspices of the Roadsides Conservation Committee and uses a three-tiered classification system (high/medium/low conservation value) that forms the basis of a municipality-wide roadside management plan. Only one formal assessment, for the Shire of Hastings, has reached draft form. Other Shires have been surveyed - for example, the Shire of Seymour. Where such assessments designate roadsides to be of high conservation value this could be reflected in Council's final recommendations. In addition, many vegetated roadsides make a contribution to the local scenic landscape, and provide some habitat. Where systematically identified, these could also be listed for protection.

Unused roads

When the State was being settled, surveyors provided access to every block by means of a surveyed Crown road reserve. Many of these

reserves have never been used as roads, and they are usually held by the occupiers of the adjoining land under an unused-road licence, often for grazing.

Unused roads

Recommendation

M2 That unused road reserves be used in accordance with the general recommendations for Services and Utilities outlined above

and that the following guidelines, approved by the government following publication of the final recommendations for the Melbourne Area in 1977, continue to apply to unused roads.

Guidelines for unused road reserves

- * The clearing of native trees and shrubs other than noxious weeds should continue to be clearly prohibited in the conditions of unused-road licences.
- * A condition permitting public use of licensed unused roads should be written

into unused-road licences where necessary to provide practical access to public land.

- * Unused roads or easements should not be alienated if there is any likelihood that they will have value for future traffic, nature or landscape conservation, recreation, or other public use.

Specific roadside conservation sites

Recommendation

M3 That when widening or re-alignment of roads is proposed, sites of geological, archaeological, historical, habitat or botanical significance that may be affected be investigated and every effort made to retain and preserve them.

Note:

Sites are listed in the schedule at the end of this chapter.

Railways

Railways played a major role in the economic and social development of the Melbourne Area,

District 2, but now only the high-usage lines remain open. Sections of the passenger and freight lines - North Eastern (Wodonga), Gippsland (Sale), and South Gippsland

(Leongatha) Railways - are in this area, as are the suburban lines from Watsonia to Hurstbridge, Mooroolbark to Coldstream, Upper Ferntree Gully to Belgrave, and Baxter to Stony Point.

Various former railway lines have been closed, and these are referred to in Chapters N - Uncategorised Public Land, F - Historic and Cultural Features Reserves, and J - Community Use Areas.

Railways can also have other important values, and the following guidelines aim in particular at protecting native vegetation present.

- * Where isolated remnants of the original vegetation remain on land associated with railways, every effort be made to protect that vegetation consistent with manage-

ment practices.

- * While recognising the need for clearing or pruning vegetation close to railway lines for reasons of safety and fire prevention, the Publication Transport Corporation should consult the Department of Conservation and Natural Resources regarding the manner in which the risk posed can be reduced, while at the same time reducing the environmental impact to a minimum.
- * Burning off, slashing, or clearing of railside vegetation should be kept to a minimum consistent with providing adequate safety and fire protection. Particular care should be taken with the use of herbicides.
- * Weeds and vermin on land associated with railways should be controlled by means that do not affect non-target species.

Railways

Recommendation

M4 That railways continue to be used in accordance with the general recommendations for Services and Utilities outlined above

and that landscape and conservation values of railway alignments be protected by observation of the above guidelines.

Significant sites along railways

Vegetation along railway lines can have particularly high conservation and landscape values, especially in agricultural districts where most of the vegetation has been cleared. They often contain remnants of the original vegetation and can serve as habitat corridors for native fauna. Sites with significant stands of remnant vegetation are proposed to be protected under public authority management agreements between the Public Transport

Corporation and the Department of Conservation and Natural Resources. Railway structures can also be of historical significance. Although the places listed below are still in use, management should be such as to not compromise their historical integrity.

Geological features exposed in railway cuttings are a useful adjunct to more detailed work involved in mapping the geology of an area and are often used as an educational resource.

Significant sites along railways

Recommendation

M5 That important sites along railway lines be protected.

Note:
Sites are listed in the schedule at the end of this chapter.

Ports

Western Port has high value for port purposes. Its deep water in the western entrance and North Arm (minimum depth 14.3 metres) is

highly significant in a State and national context for deep draught shipping. Hastings has considerable areas of flat land suitable for port and port-related industrial development. These values have been recognised and

protected in the government's Statement of Planning Policy No.1, and subsequent reports. These documents also state the need for port development to be linked to protection and maintenance of the sensitive ecosystem of Western Port, reflecting the conclusions of the Western Port Bay Environmental Study and State Environment Protection Policy No.W28.

The existing channel provides deep-water access to wharves at Crib Point and Long Island jetties and at the Broken Hill Proprietary Co Ltd (BHP) facility, formerly Lysaghts, all of which adjoin extensive areas of land zoned for port related use. BHP has rights to reclaim areas to the north of its existing wharf. Two on-shore areas, between Stony Point and Crib Point and between the BHP area and the Yaringa Boat Harbour, are zoned as proposed port purposes reserve under the Shire of Hastings' Planning Scheme. Parts not already in public ownership have been subject to re-purchase.

Since Council's 1977 recommendations, the Western Port Bay Environmental Study sites of significance documents, and the Victorian Ports Land Use Plan (draft final report 1991) have contributed to knowledge of the values and uses of this area.

About 90% of the Port of Hastings' cargo is presently bulk liquids and the Ports Land Use Plan considers that this is not expected to change over the next 20 years. It is proposed to re-commission the Crib Point jetty for use for unloading imported crude oil. The government recently approved a Shell-Mobil oil storage plant on the site of the former British Petroleum refinery. This plant will utilise the Crib Point jetty.

The Ports Land Use Plan suggests that options be kept open for future general cargo facilities. It also concludes that the Long Island Point and Crib Point Jetties be used for handling crude oil, gas, and petroleum products, with an option of a Bass Strait single-point mooring to be investigated if very large crude oil carriers are proposed for the port, and that the steel trade continue to operate from the two BHP jetties.

With respect to future general cargo port needs, the report describes three possible sites - Old Tyabb, Tyabb, and Crib Point - but argues that it is difficult to justify the retention of all three in view of the 20-year trade outlook. It concludes that the Crib Point site is the least attractive, mainly because of the

traffic impact on residential areas; the Tyabb site is of long term strategic importance for large scale port development beyond the next 20 years; and the Old Tyabb site is the best site for initial development, being cheapest to develop and least environmentally sensitive. However it may be restricted by risks associated with the adjacent fractionation plant. The report states that the last two sites should be retained for potential port development, and recommends a port boundary to include undefined land areas at Long Island Point, Crib Point, Stony Point, and the Old Tyabb site, and that the government should continue to purchase land adjacent to the Tyabb site as it becomes available. The Tyabb site is mainly within the BHP reclamation area, over which the government has an option to purchase 50%.

The proposed emphasis of future port needs will generally avoid environmental values at Hastings Bight, including Sandstone Island and the 'Heritage Cove' foreshore, Woolleys Beach, Crib Point foreshore, and north of Yaringa. However, the site retained at Tyabb for possible long term development is associated with a range of high conservation values, as follows:

- (a) Botanical values: valuable stands of sand heathland, swamp scrub and coastal saltmarsh remain, and a diverse ground flora.
- (b) Zoological values: the manna gum open forests and woodlands, swamp paperbark and saltmarsh/mangrove zone provide habitat for 11 native mammal species including one of few sites in the State where the New Holland mouse has been recorded, 127 native bird species including the uncommon southern emu-wren, 8 reptile and 7 amphibian species. It has been classified as a site of State significance. About half this site is in private ownership.
- (c) Geological/geomorphological values: the coastline, with its broad saltmarsh zone and variable mangrove fringe, was considered of State geomorphological significance as a major site for the study of the role of mangroves in coastal sedimentation.

The Western Port Bay Strategy (WRPCC 1991) recommends that any future major port works within the declared 'reclamation area' be subject to environmental assessment under the *Environmental Effects Act 1978*, and that the foreshore areas north of The Bluff be considered for conservation and passive recreation, rather than port purposes. A

review of the Hastings Port Industrial Land Use Plan is expected to consider this.

After considering the above, to ensure flexibility for the future, Council proposes that the harbour depot area at Stony Point, the Jetty easement at Crib Point, the Long Island Point Jetty and Old Tyabb foreshores be recommended for port purposes, and that the

Tyabb foreshore south of Lumeah Road, Yaringa be retained within the Coastal Reserve, but recognising its value for future port development. Should a major port development option be pursued, the area between Stony Point and Crib Point should also be considered, in light of the environmental sensitivity of the Tyabb foreshore.

Ports

Recommendation

M6 That the following areas be used in accordance with the general recommendations for Services and Utilities above, and be available for port development:

- (a) the harbour depot area at Stony Point
- (b) the Jetty easement at Crib Point
- (c) the Long Island Point Jetty
- (d) Old Tyabb foreshore.

Notes:

1. In the long term, if there is a need for additional port land, Council considers that the Tyabb foreshore south of The Bluff and the less environmentally sensitive area between Stony and Crib Points should be considered as possible sites.
2. Council is aware that the Government has an option to purchase 50% of the 'reclamation area' and believes that this option should be taken up.

ELECTRICITY AND GAS

Various electricity and gas installations are located on public land, including the Rubicon - Royston hydro-electricity sites, fringes of the Yallourn/Yallourn North power station and open cuts, transmission lines, terminal stations, gas pipelines etc. In particular the identified future overburden dump at Anderson Creek

north of Yallourn lies in the Melbourne Area, District 2. Recommendations for this area were made in the Council's 1987 Latrobe Valley Special Investigation report. Refer also to recommendations G96, J11, J15, K4, N1 and O2 in this report.

Electricity and gas

Recommendations

M7 That existing easements and installations be used in accordance with the general recommendations for Services and Utilities outlined above, and for their designed purpose.

Notes:

1. Many existing installations are too small to show on Map A.

(continued)

M7 - Electricity and Gas (continued)

2. The Rubicon Falls Power Station and dam, Lower Rubicon Power Station, Royston Dam and Power Station and associated aqueducts and trestle bridges comprise the State's first hydro-electricity system (1928). As an operating power station system, the installations are categorised as services and utilities areas. However their important historical values should be protected. If this system becomes surplus to requirements it has the potential to be a museum or the focus of a historic and cultural features reserve.

M8 That new power lines, pipelines, and other electricity and gas installations be planned in accordance with the general recommendations for Services and Utilities outlined above

and that

- (iv) they be planned to minimise disturbance to public land and protect the values associated with that land
- (v) they not be sited on public land without the agreement of the land manager
- (vi) new pipelines and power lines follow existing easements wherever possible (this may require widening of some easements)
- (vii) utilities such as power lines and pipelines not be located alongside waterbodies or wetlands.

Notes:

1. The State Electricity Commission of Victoria (SEC) holds a block at Coldstream for a future terminal station. This 30 ha site has relatively intact cover of red stringybark and messmate sclerophyll woodland with a shrubby and native grass understorey. It is of regional botanical significance, being in an area with little remnant vegetation, and as part of a larger site also of regional zoological significance, with the eastern small-eyed snake, delicate skink and swamp wallaby and a diverse variety of bird species recorded. The Council considers:

- (a) this block should be managed as a natural features reserve until required as a terminal station; and
- (b) that if part of the block is not required for the terminal station, it be retained as a natural features reserve.

2. Another SEC block is held at North East Tyabb for the proposed Pearceedale terminal station. Council proposes that, north of Bungower Road, part of the area be included as a services and utilities area for this purpose, while that part retaining native vegetation be added to the adjacent nature conservation reserve (Recommendation C48). The area south of Bungower Road is recommended for addition to the coastal reserve (H1).

3. The Gas and Fuel Corporation holds land at Bittern between Stony Point Road and the coastal reserve. Council proposes that the strip of remnant vegetation on the east side be added to the coastal reserve (see Recommendation H1), while the majority is recommended as a services and utilities area. Council considers that the two areas of remnant vegetation on the west boundary should also be retained.

4. A proposed 300 MW undersea power interconnection between Tasmania and the mainland - Basslink - has been proposed for construction at the turn of the millennium. Six possible cable landing sites have been identified, including four in the Melbourne Area, District 2 - west of Wonthaggi, north of Flinders, the south east end of French Island and near Tyabb. No decision on the route has been made, although sites west of Wonthaggi and around Cape Liptrap (not in the Melbourne Area, District 2), were considered preferable to others in feasibility studies.

COMMUNICATIONS, SURVEY AND NAVIGATION

Telecommunications

Communications installations include underground conventional and optical fibre cables,

towers with microwave dishes, mobile telephone receiving and transmitting structures, various radio masts, and satellite dishes.

Telecommunications installations

Recommendations

M9, M10 That existing or proposed communications installations on public land be used or planned in accordance with the general recommendations for Services and Utilities outlined above.

M9 Existing installations

Proposed installations

M10 That

- (iv) where public land is proposed to be used for new Australian and Overseas Telecommunications Corporation Ltd (AOTC) towers and cable alignments these be planned and sited to minimise disturbance to that land and to protect the values associated with the land
- (v) the agreement between the Commonwealth and State Governments that AOTC will consult with State agencies and act in accordance with State planning processes, be implemented in relation to proposals affecting public land
- (vi) the minimum area necessary for access to and maintenance of communications installations be temporarily reserved or remain as unreserved Crown land with appropriate lease or licence arrangements
- (vii) where other forms of public land tenure apply, the utility involved have the right to occupy a minimum area around the installation and provide lines of sight, and the right to obtain access to the area
- (viii) (a) communications towers and installations proposed by other agencies (for example DCNR, SEC, Police and Emergency Services) be located at existing sites and on existing structures wherever possible, to minimise the number of separate hilltop clearings, intrusive structures and access tracks
- (b) AOTC and other users permit access to all new facilities by other users on a cotenancy or sub-tenancy basis.

Survey stations and navigation aids

Permanent survey marks and trigonometric stations form part of Victoria's geodetic

reference system. They are numerous and widespread. Navigation structures on the coast and in navigable waters are crucial for safe shipping and recreational boating.

Survey stations and navigation aids

Recommendation

M11 That survey stations and navigation aids be used in accordance with the general recommendations for Services and Utilities outlined above

and that

(iv) the minimum area necessary for

(a) survey purposes around trigonometrical/geodetic stations; and

(b) access to and maintenance of navigation aids, be temporarily reserved on public land where it would otherwise remain as unreserved Crown land

(v) where other forms of public land tenure apply, the appropriate government agency have the right to occupy a minimum area around the station or aid and provide lines of sight, and the right to obtain access to the area

(vi) where new technology (such as the global positioning system) renders existing survey or navigation installations obsolete, that such structures be removed and sites, access tracks and lines of sight be restored with indigenous vegetation.

MUNICIPAL BUILDINGS AND SERVICES

Shire offices and other municipal buildings providing services are often located on public land.

Recommendations

M12-M14 That public land used for municipal buildings and services be used in accordance with the general recommendations for Services and Utilities outlined above.

M12 That existing legal use and tenure continue for areas that are at present reserved and used for municipal services and operations such as offices, depots, infant welfare centres, or kindergartens.

Rubbish tips

M13 That

(iv) existing legal rubbish tips (including those approved by the relevant authorities but not yet operating) continue to be available for disposal of rubbish

(v) areas used on a temporary basis for rubbish disposal or sanitary depots, whether legal or illegal, be fully rehabilitated, at the expense of the users, where known

(vi) within areas reserved as rubbish tips, disposal of waste be confined to small sections of the site at any one time, and that steps be taken to prevent the dumping of garbage other than in the designated areas.

Grantville regional refuse disposal area

The Shire of Bass has operated gravel pits in the northern part of the Grantville gravel reserve for a number of years. Most of these

pits are worked out, although additional resources occur. In recent years the Shire has established a landfill operation as part of the rehabilitation of former pits. The landfill has been based on the disposal of refuse from the

Grantville area. Recently the Shire of Phillip Island and Borough of Wonthaggi have, together with the Department of Conservation and Natural Resources, proposed that the northern half of this reserve be made available for refuse disposal, providing for an estimated

19 year life, with new sites to be investigated elsewhere to service needs in the longer term. The sand and gravel reserves of the existing pit in this area are considered to have a life of about 3 years.

Grantville refuse area

Recommendation

M14 That the northern part of the Grantville gravel reserve be used as a regional refuse disposal site

that

(iv) further extraction of sand and gravel resources be permitted

(v) extraction be integrated with planning for future refuse disposal

(vi) stands of remnant vegetation be retained, especially in areas forming a buffer to adjoining land uses

and that the area be temporarily reserved, and the landfill and extraction operations managed in a unified manner under the direction of the Department of Conservation and Natural Resources.

Note:

There is a need to rehabilitate the highly visible upper batter slopes.

HOSPITALS, PUBLIC OFFICES AND JUSTICE

Public offices and other buildings under the following recommendation are those that provide the base for provision of services to the public and a workplace for public sector

employees. However they are not widely used for community activities, as are the buildings in public use (see Recommendation J24).

Hospitals, public offices and justice

Recommendation

M15 That existing legal use and tenure continue for areas and buildings as listed in Appendix IX that are at present reserved and used for hospitals, other institutions, public offices, court houses, police stations or prisons

and that they be used in accordance with the general recommendations for Services and Utilities outlined above.

Note:

The following buildings in particular are of historical interest: Mansfield Court House; Lilydale Court House; Wonthaggi State Public Offices; Wonthaggi Court House.

WATER AND SEWERAGE SERVICES

The following recommendations apply to public land areas with: water or sewerage pipes, channels, structures etc used to convey water or sewage; storages that are part of the reticulation system; storages of water not used for domestic consumption; drainage or flood

protection structures; watering points; or sewage treatment and disposal, if on public land. Areas used for water harvesting and associated bulk storage are referred to in Chapter D - Water Production.

Water and sewerage services

Recommendation

M16 That the following areas, as listed in Appendix IX be used in accordance with the general recommendations for Services and Utilities outlined above

- (iv) (a) off-river water storages, service basins, water towers, other water supply installations, channels and storages not used for domestic or industrial consumption
 - (b) areas used as watering points for travelling stock, or for fire-fighting, roadworks or other purposes requiring access to water
 - (c) areas used for sewage treatment or disposal
- that
- (v) where areas in (iv) above have nature conservation, recreation or cultural heritage values, these be protected where this does not conflict with the primary use

and that these and their associated reserves remain under existing tenure and control unless otherwise stated.

Melbourne Water pipelines/aqueducts

Olinda Creek pipeline

North of the Silvan Reservoir, Melbourne Water holds land along Olinda Creek for the purposes of the Silvan to Preston main, Silvan to Olinda conduit, and Silvan to Mount Waverley main. The underground pipelines replace a now-disused aqueduct. While most of the corridors of both pipelines are cleared, their margins retain stands of natural vegetation. The existing pipelines lie between the Olinda Creek water frontage and the proposed Dandenong Ranges State Park.

O'Shannassy Aqueduct

The Silvan Reservoir is linked to the O'Shannassy and Upper Yarra reservoirs, the latter by pipe but the former still partly by open aqueduct. Parts of the aqueduct corridor retain native vegetation, and these are important remnants within the adjacent semi-cleared farmland, particularly between the Silvan Reservoir and Wandin Yallock. Such a linear public land link could provide a habitat corridor and opportunities for recreational activities, if declared surplus to Melbourne Water's requirements.

Melbourne Water pipelines/aqueducts

Recommendation

M17 That the above pipelines and aqueducts be used in accordance with the recommendations for Water and Sewerage Services outlined above

that

- (vi) remnant vegetation be protected
- (vii) the Olinda Creek pipeline section adjoining the Dandenong Ranges State Park be managed in consultation with the managers of that park.

Note:

Council is aware that sections of the aqueduct have been piped but that Melbourne Water considers it desirable to retain the aqueduct as a back-up supply route.

Retarding basins

Several retarding basins have been constructed in the study area to provide for flood protection in regional drainage.

Recommendation

M18 That retarding basins be used in accordance with the recommendations for Water and Sewerage Services outlined above

and

(vi) (a) to facilitate regional drainage and flood protection

(b) for grazing or recreation at the discretion of the managing authority, where appropriate.

CEMETERIES

The following recommendations apply to cemeteries in current use that may also have other particular values. Infrequently used cemeteries often contain relatively undisturbed

native vegetation, and old cemeteries may have cultural or historic values. Refer also to Recommendations F34 and F35.

Recommendation

M19 That the areas reserved and used for cemetery purposes listed in Appendix IX be used in accordance with the general recommendations for Services and Utilities outlined above

that

(iv) where part of a cemetery reserve is unused, if possible indigenous vegetation be retained and protected

(v) cemetery managers seek the advice of the Department of Conservation and Natural Resources as to the appropriate management of the values referred to in (iv) above.

Significant sites in cemeteries

M20 That the historical values of the following cemeteries be protected.

Aberfeldy
Allambee

Ferntree Gully
Gaffney Creek

Korumburra
Lilydale

Matlock
Narracan

Tyaak
Woods Point

OTHER UTILITY USES

Recommendation

M21 That other public land areas used for depots of public authorities, Country Fire Authority stations, markets, abattoirs, saleyards or other services and utility uses not specified in previous recommendations, whether reserved for that purpose or unreserved, continue to provide these uses in accordance with the general recommendations for Services and Utilities outlined above.

+

Note:

1. The Shire of Alexandra requires a depot site at Marysville. The existing Department of Conservation and Natural Resources depot site may have sufficient space to accommodate the Shire's needs.

(continued)

M21 - Other Utility Uses (continued)

2. Snobs Creek previously had a wildlife reserve along the stream for several kilometres upstream from the Departmental fish hatchery. The section in State forest has now been recommended as a river zone (see Chapter E). The Council resolved that the downstream area including the hatchery should be a Services and Utilities area.

SCHEDULE OF VALUES TO BE PROTECTED

Sources of the following include the unpublished 'Survey of the Relic Vegetation of Victorian Railway Reserves' by Frood (1985), 'Register of Australian Historic Bridges' by O'Connor (1983), 'Historic Sites in the Melbourne East Study Area' report by Supple *et al* (1989), 'Sites of Botanical Significance in the Land Conservation Council Melbourne District 2 Study Area' report by Moorrees and Molnar (1992), 'Sites of High Conservation Value for Fauna within the Melbourne 2 Study Area' report by Lumsden (1992), and the Melbourne Study Area Final Recommendations (LCC 1977).

Kilmore, Broadford, Seymour, Yea, Alexandra and Mansfield areas

Historic sites

- * North Eastern Railway at Seymour - historic metal girder bridge over the Goulburn River dating from 1872
- * Seymour Railway Station buildings - assessed as very important architecturally
- * Marysville Road - historic timber girder bridge over Wilks Creek with stone abutments built about 1900

Nature conservation

- * North Eastern Railway between Donnybrook and Beveridge - only known occurrence of the endangered *Lepidium hyssopifolium* (small pepper-cress)
- * North Eastern Railway between Beveridge and Wandong - *Themeda* and associated *Danthonia*, *Poa* and *Phragmites* grassland communities, herbs, and shrubs including a number of significant species; also the swamp habitat in good condition including a recorded site of the vulnerable *Delma impar* (striped legless lizard) and the suspected rare *Botaurus poiciloptilus* (Australasian bittern)

Recreation sites and landscape

- * Molesworth lagoon - roadside picnic spot

Diamond Valley, Eltham, Healesville, Lilydale, Sherbrooke, and Upper Yarra areas

Historic sites

- * Yarra Junction to Powelltown Road - remnant embankments, cuttings and track formation of the former tramway
- * Bridge over Yarra River at Woori Yallock - built in 1927 this 120 metre long bridge is concrete with timber supports and buttresses
- * Hurstbridge to Arthurs Creek Road - historic concrete arch bridge over Diamond Creek built in 1916 (known as 'Burkes Bridge')
- * Eltham to Yarra Junction Road - historic brick arch bridge built about 1890 over the Maroondah Aqueduct at Yarra Glen

Nature conservation

- * Rodger Road reserve, Panton Hills - stand of dry sclerophyll forest which includes several regionally significant species
- * Road reserves in the Coldstream to Yarra Glen district - eight sites containing the rare *Eucalyptus yarraensis* (Yarra gum)
- * Yering disused rail reserve - a remnant *Themeda triandra* (kangaroo grass) community with *Eucalyptus ovata* (swamp gum) and various wattles
- * Tarrawarra Road reserve - remnant stand of the lowland form of *Eucalyptus pauciflora* (snow gum)

- * Warburton Highway/Old Gippsland Road - good quality, undisturbed stand of heathy foothill forest/heathy woodland

- * Road reserve at Kilsyth South - relatively intact remnants of heathy forest as well as examples of swampy riparian forest and swamp scrub

Recreation sites and landscape

- * Mount Dandenong Tourist Road

Pakenham, Buln Buln, and Narracan areas

Historic sites

- * The railway stations at Trafalgar and Yarragon Railway are assessed as important architecturally

Nature conservation

- * Gippsland line between Beaconsfield and Pakenham - remnant native vegetation including *Themeda* communities
- * Gippsland line between Pakenham and Tynong - *Themeda* and *Themeda/Melaleuca* communities
- * Gippsland line between Trafalgar and Yallourn - communities of *Themeda/Leptospermum/Lomandra*

Flinders, Mornington, Hastings, Cranbourne areas

Historic sites

- * Stony Point Railway station - assessed as important architecturally
- * Old Mornington Road - historic stone arch bridge built in 1865 over Kackeraboite Creek at Mount Eliza

Nature conservation

- * South Gippsland Railway between Clyde and Tooradin - *Themeda* communities and the rare daisy *Helichrysum* sp. aff. *acuminatum*

Recreation sites and landscape

- * Gembrook to Pakenham roadside environs

Phillip Island, French Island, Bass, Wonthaggi, and Korumburra areas

Historic sites

- * Lang Lang, Loch and Korumburra Railway Stations

Recreation sites and landscape

- * Phillip Island Road - roadside environs

N. UNCATEGORISED PUBLIC LAND

Some small areas of public land in the study area that are used for grazing, camping and other purposes, have not been specifically mentioned in these recommendations. Others, both reserved and unreserved, receive little active use at present, even though they may once have been reserved for some specific purpose.

These areas may not have outstanding values, however they have potential for public or departmental use, or uses that would complement other areas. Accordingly, they should remain in the public land estate, and are recommended below as uncategorised public land.

In townships, public land is currently used for a wide range of purposes. In the same way as

land outside townships, Council has made specific recommendations for township land to be set aside for natural features reserves, community use reserves (particularly recreation areas, parkland and gardens and buildings in public use), or services and utilities. Those recommendations are included in the appropriate chapters. Other areas of public land in townships should remain as uncategorised public land - to be used, if required, for township purposes in the future.

The Council intends that existing legal uses and tenure of these small areas of public land should continue, and that those not currently used for any particular purpose be used in a way that will not preclude their commitment in the future to some specific public use.

Uncategorised public land

Recommendations

NI That

- (i) public land in urban areas other than that recommended for specific uses, and listed in Appendix X, remain as uncategorised public land to meet future urban requirements
- (ii) public land outside urban areas other than that recommended for specific uses, and listed in Appendix X, remain as uncategorised public land for as yet unknown public purposes
- (iii) existing legal use and tenure continue except where such use will preclude the future use of these areas for public purposes

Note: This recommendation includes the Wallaby Creek Lodge and farms within land managed by Melbourne Water and which forms a buffer to the Wallaby Creek water supply catchment.

Revegetation

The reduction and deterioration of tree cover in some rural areas of the State is causing increasing and widespread concern. Clearing - to establish pasture and crop lands - has been the initial cause of this reduction. The gradual decline, and ultimate death, of remaining trees, however, is emerging as a major problem in some areas.

Soil compaction by stock, excessive use for timber, attacks by insects, parasites, and other pathogens, exposure to winds, salting of the soil, erosion, and natural senescence among ageing trees are all possible causes of the

decline. The prevention of natural regeneration by grazing or other practices is exacerbating the problem.

Increasing soil salinity resulting in the degradation of grazing and crop country, loss of shelter for stock and for wildlife, and diminished aesthetic value are all consequences of this decline. Although difficult to express in monetary terms, it results in economic loss.

The large numbers of land holders joining Landcare and other programs involving tree planting show that these issues are recognised and are being addressed.

In parts of the study area, several small parcels of public land carry little or no natural vegetation. In many cases they have been reserved for specific purposes, although not used for them, and have been continuously licensed to the adjoining landholders. Over time they have been cleared and integrated with the surrounding farmlands. In other cases the reserves can still be recognised by the native vegetation, but for a number of reasons, the tree cover has declined.

In areas where tree decline is becoming a problem and in areas where native trees are greatly reduced in number, Council recommends that some small areas of public land be used for the re-establishment of tree species indigenous to the area.

Following successful revegetation, some of these areas could serve as examples to the rural community of the effectiveness of such vegetation schemes.

Revegetation areas

Recommendation

N2 That

- (i) the areas indicated on Map A and listed in Table 23 below be used to foster the re-establishment of tree species indigenous to the area
- (ii) when revegetation is complete, they be considered for reservation as natural features reserves.

Table 23

AREAS FOR REVEGETATION

Parish (P) or Township (T)	Description	Area (ha)
P ALEXANDRA	CA 36D	1.25
P ALEXANDRA	CA 91C	2.51
P BALNARRING	CA 7D	5.56
P BROADFORD	CA 141K	4.01
P DARNUM	CA 88J	4.10
P DOOLAM	CA 36J,36H	2.51
P FLOWERDALE	CA 17D NO SEC	0.50
P GHIN GHIN	CA 53B	0.50
P KOBAYBOYN	CA 11A SEC C	3.26
P KONGWAK	CA 25P	4.00
P MERTON	CA 77A,77B,77C,83D	9.62
P TALLAROOK	CA 78F SEC 1	22.21
P WHANREGARWEN	CA 14C	1.00
P WOORI YALLOCK	CA 42C	4.50
T YEA	CA 6A,6B,SEC A	4.02
P YEA	CA 52G	1.00

Crown land assessment and classification process

A process of Crown land assessment (external to the Land Conservation Council process) was initiated by the Government in the mid 1980s to classify Crown land across the State as either 'public' land or 'government' land. 'Public' land in this process is broadly similar but not identical to public land under the *Land*

Conservation Act 1970; for example, it can include Crown land in Cities and Rural Cities.

'Public' land is managed by the Department of Conservation and Natural Resources. It is characterised by its use for public benefit and for the protection of its intrinsic values, including conservation, historical, recreation, resource production, community, or strategic values. The principal direction of management is to conserve these values.

'Government' land is managed by the Department of Finance, and includes land leased for commercial purposes, for departmental operational use, and land that could be sold into freehold ownership.

The process involved identification of values - both 'public' land and dollar values, followed by review by an interdepartmental committee. Land in some of the Council's public land use categories was automatically classified as either 'public' land - eg. parks and conservation reserves - or 'government' land - eg. land for agriculture - while other categories required full assessment.

The assessment procedure (since 1991) involves government agencies and statutory authorities identifying land surplus to operational requirements, after consulting with municipalities. The Department of Finance then inserts advertisements in the *Government*

Gazette and newspapers listing these properties.

Council, as the public land planning body, considers that the process for identification and disposal of Crown land should involve adequate consultation with municipalities and local interest groups (e.g. community, recreation, and conservation groups), and an opportunity for public comment. Further, if Council's recommendations, following its full statutory process, provide for retention of a block as public land or for alienation (sale), then it is inappropriate for a subsequent process to reverse this, unless specifically provided for by the Council.

In these recommendations, there are provisions in several land use categories for such subsequent processes to be applied, under Community Use Areas (buildings in public use), Services and Utilities, and Uncategorised Public Land.

In the future, land in certain categories may no longer be required for public purposes or public uses and values may still be able to be maintained if the parcel is sold. Such decisions should be made on a case-by-case basis, and with the involvement of the Department of Conservation and Natural Resources (or other land manager), the local municipality, and the community.

Proposals to sell public land currently recommended as Uncategorised Public Land, Services and Utilities, and Community Use Areas (buildings in public use) should be considered under the following process:

- * Land that is identified as not being required for the purpose for which it was set aside, or for which no obvious use exists, should be assessed for its public land values.

- * If significant public land values exist it should be considered for re-categorisation by the Department of Conservation and Natural Resources, and reserved appropriately.
- * The Department of Conservation and Natural Resources should either directly manage the land or seek expressions of interest from the community and the local municipality for use of the land and protection of the identified values.
- * Alternatively, the land could be sold subject to protection of the public land values, for example, listing on the Historic Buildings Register, or application of conservation covenants. Such action may be appropriate where the values are of local or regional significance.
- * Where relevant, the Department should investigate the feasibility of a land exchange with adjoining landowners and the municipality.
- * If it is decided to dispose of the land, the Department of Conservation and Natural Resources and Finance should advertise the intention to dispose of the land, both locally and State-wide, identifying the parcel concerned, its values, and the mechanism for protection of those values.
- * The community should have 30 days in which to comment on the proposal and any comments should be considered before any decision is made to proceed with the disposal.
- * Sale of land should be discussed with the local municipality to ensure that planning provisions are met and orderly marketing of land is achieved.

In most previous Council investigations, provision has been made for the sale of Crown land. In this investigation numerous small land parcels have been recommended for sale or exchange in Chapter O - Land Not Required for Public Purposes.

Crown land assessment and classification

Recommendation

N3 That, in relation to land classified as Uncategorised Public Land, Services and Utilities, and Community Use Areas (buildings in public use) that is apparently surplus to requirements, an assessment of public land values be undertaken by the Department of Conservation and Natural Resources and, following full consultation (in accordance with the procedure outlined above) with the relevant municipal council, the community in general, and other relevant land managing agencies, these areas be considered for re-categorisation, exchange or disposal.

Note:

It is intended that this recommendation apply to the whole State, not just this study area.

Unused railways

The first railways in Victoria were built in the 1850s, with the first in the Melbourne Area, District 2 being the north-eastern line to Wodonga - begun in 1867. In 1877-88 a Gippsland trunk line was built to Moe. An 'octopus' of new lines was built across the State in the 1880s, including the South Gippsland Railway, lines on the Mornington Peninsula, and the Thorpdale, Tallarook to Mansfield, and Warragul to Neerim South Lines.

After 1892 coal railway lines were constructed, the most notable being the Nyora to Wonthaggi line. In the early 1900s lines were extended into the higher country including, in response to the expense of broad gauge lines, a number of narrow gauge lines. With the advent of road transport, and declines in rural population and rural industry, the extension of the railway network ceased in the study area by 1922. Railway lines then entered into a period of closures, particularly after World War II.

Council does not believe it is necessary for all disused railway reserves to be retained in the public domain to reflect their historical values and their role in the development of the State.

Sections of the surplus railway lines and structures have significant historical values and these have been recommended as 'historic and cultural features reserves' (see Chapter F). Others have particular recreation values, and these are referred to in Chapter J - Community Use Areas.

The remaining sections of the surplus lines have a range of values, including less significant historic values, recreation values, nature conservation values, and capability for pastoral land use. They have been recommended as 'uncategorised public land' and are subject to the following planning process agreed to by the former Ministers for Conservation and Environment, and Transport.

This process involves the setting up of local advisory committees who make recommendations, in the form of management plans, to the Ministers for endorsement. The committees are required to seek expressions of interest from agencies, groups, and persons as to the future use of these lines. Such future use could involve retention of the lines in public ownership or the sale of all or part.

Planning for the Lilydale to Warburton line has been completed. It is nearing completion for the Nyora to Wonthaggi line and has begun for some of the lines in the north of the study area.

Railways in current use are included in the Services and Utilities category (see Chapter M).

Most unused railway lines within the study area have been declared surplus by the Public Transport Corporation. They are as follows.

Tallarook to Mansfield, and Alexandra

This line has a range of historic, recreational and conservation values, some of which are subject to other recommendations (see Chapters F and J). The section from Yea to Cathkin and on to Alexandra is of particular note. The planning process (see below) has just started for this line.

Moe to Thorpdale

Most of this line has been sold, except where it coincides with or abuts the public land water frontage reserve on Narracan Creek.

Coldstream to Healesville

This line is operated as a tourist railway and has been recommended as a community use area - see Chapter J.

Baxter to Mornington

This line, except for the Mornington station ground which has been sold, is operated as a tourist railway and has been recommended as a community use area - see Chapter J.

Bittern to Red Hill South

This line has been sold. Most has been acquired by the Shire of Hastings which is progressively developing it as a linear park for walkers and horse-riders.

Korumburra to Outtrim

This line has been mostly sold, other than two isolated sections, neither of which is known to have any special historic, recreational or nature conservation values.

Nyora to Wonthaggi

The section of this line between Anderson and Wonthaggi has been recommended as part of a

historic and cultural features reserve - see Recommendation F20.

Belgrave to Gembrook

This line - the Puffing Billy railway - has been recommended as a historic and cultural features reserve - see Recommendation F4.

Lilydale to Warburton

A government-supported planning process for this line has culminated in the approval of a management plan which proposes that most of the railway be used for recreation purposes. It has been recommended as a community use area - see Chapter J.

Warragul to Noojee

This disused railway has been mostly sold. The remaining public land sections are included in a historic and cultural features reserve (Recommendation F13) and a community use area (See Chapter J).

Moe - Walhalla line

Part of this line traverses State forest and most of the remainder is sold. That section in public ownership near Erica, together with nearby Crown land, provides opportunities for a recreation access route from that town to the Thomson River and Walhalla. Council has recommended that the Erica section of the line be classified as a 'community use area'.

Unused railways

Recommendation

N4 That unused railways be used in accordance with the general recommendations for Uncategorised Public Land, until completion of the planning process outlined above.

Inappropriate townships

Some townships, although gazetted, either have never been settled or have been largely abandoned. These include former mining or milling townships in State forest, and townships in agricultural areas where the main settlement site has shifted. Council considers that some such townships are no longer

appropriate and intends to consider their revocation in the Final Recommendations, following consultation with municipalities. Crown land in some of these townships supports native vegetation in either an undisturbed condition or, in the case of partially developed and subsequently abandoned townships, as regrowth. In other cases they exist as cleared paddocks.

O. LAND NOT REQUIRED FOR PUBLIC PURPOSES

The era of large-scale alienations of Crown land for agriculture is past. The Council recommends that, at this stage, no additional large areas of public land be developed for agriculture in the study area. Instead, in reviewing public land for this investigation, and as a result of Crown land assessments carried out by the Department of Conservation and Natural Resources (see Chapter N), some areas have been provisionally identified as not being required for public purposes. Following consideration of submissions received after publication of this report, if these areas are similarly included in the Council's final recommendations, then they could be considered for alienation, subject to an appropriate process.

The Council believes that, where possible, land available for alienation should be exchanged

for parcels of freehold land that contain important values, in order to bring that land into public ownership or to add to the integrity, viability, or ease of management of reserves.

Council's criteria for assessing land exchanges (see Appendix XI) provide that, for a proposed land exchange to be recommended, it must result in the enhancement of the value to the community of the public land estate.

Some of the areas listed in Table 24 below are in agricultural areas. It is intended that this land, if alienated, should form additions to present farms, rather than be developed as new units. Planning schemes may require consolidation of titles. Other areas are in townships, and would be available for urban purposes.

Land not required for public purposes

Recommendations

O1,O3,O4 That:

- (i) the land in urban areas listed in Table 24 be considered for alienation and use for urban purposes, in accordance with the appropriate planning ordinance
- (ii) the areas listed in Table 24 be considered for alienation (or for exchange for freehold land subject to the guidelines specified in Appendix XI) and used for agriculture.

Table 24

LAND TO BE CONSIDERED FOR ALIENATION (Recommendation O1)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
P ACHERON	CA 43D3	0.50	T COALVILLE	CA 16-19 SEC 3	0.34
T ALEXANDRA	CA 10,10A SEC 33	0.07	T COALVILLE	CA 3,4,5,7,10-13 SEC 2	0.56
P ALEXANDRA	CA 56F 56K	0.50	T COALVILLE	CA 16 SEC 1	0.06
T ALEXANDRA	PART CA 5 SEC 47	0.16	T CORA LYNN	CA 16A SEC 1	0.27
P ALEXANDRA	CA 30V	0.50		CA 10L SECT	
T ALEXANDRA	CA 6 SEC 49	0.08	T CORA LYNN	CA 14F SEC F	0.32
T ALEXANDRA	CA 2A SEC 51	0.22	P DOOLAM	CA 40A	0.75
P ALEXANDRA	CA 51A	1.00	P DOOLAM	CA 36F	2.48
P AVENEL	CA 10A SEC 18A	3.09	P DOOLAM	CA 27D	0.75
P AVENEL	CA 32B SEC 18A	2.26	P DROPMORE	CA 6,7 SEC B	15.80
P BEENAK	CA 63F	2.89	P FINGAL	ADJ CA 6	1.92
P BOOROLITE	CA 10C SEC A	2.01	T FLINDERS	PART CA 43	0.20
P BRANKEET	CA 49C	1.25	T GARFIELD	CA 15A,15B,15C	0.25
P BROADFORD	CA 155E	0.81	P GRACEDALE	CA 37B	0.33
P BUNYIP	CA 85B	0.20	P GRACEDALE	CA 128B	0.10

(continued)

Table 24 (continued)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
P GRACEDALE	CA 54D SEC B	0.19	T NOOJEE	CA 19 SEC 3	0.50
P JEETHO WEST	CA 48D 48E	0.82	P PHILLIP ISLAND	CA 72A	1.21
P JINDIVICK	CA 59H	0.30	T REEDY CREEK	CA 1B SEC 1	0.45
T KINGLAKE EAST	PART CA 6A	0.01	T REEDY CREEK	CA 2A,2B,2C,2D SEC 1	0.45
P KOO-WEE-RUP	CA 3 SEC K1	0.51	T SEYMOUR	CA 48A	0.08
P KOO-WEE-RUP	CA 46B SEC J	0.73	T SEYMOUR	CA 48C	0.04
P KOO-WEE-RUP EAST	CA 26B SEC M	0.85	T SEYMOUR	CA 10A SEC W	0.04
P KOO-WEE-RUP EAST	CA 48A SEC R	0.35	P SWITZERLAND	CA 2B	1.00
T KORUMBURRA	CA 5 SEC G	0.78	T TAGGERTY	CA 2B SEC 13	0.20
T KORUMBURRA	CA 1A SEC 4	0.09	P TANJIL EAST	CA 7J SEC C	73.00
T KORUMBURRA	CA 2 SEC 4	0.36	P TANJIL EAST	PART CA 13C SEC C	24.29
P LOYOLA	CA 79B	0.50	P TANJIL EAST	CA 7K SEC C	62.40
T MAINDAMPLE	CA 14 SEC 12	0.04	P TANJIL EAST	PART CA 18K SEC A	26.00
T MAINDAMPLE	CA 1 SEC 5	0.20	P TANJIL EAST	CA 18H,18J SEC A	30.00
T MANSFIELD	CA 1H SEC 32	0.09	P TARCOMBE	CA 26 SEC 2	2.01
T MANSFIELD	CA 9A NO SEC	0.07	P TARCOMBE	CA 50C SEC 1	0.50
T MARYSVILLE	CA 25 SEC 1	4.00	T TRAFALGAR	CA 16B SEC 11	0.12
P MERTON	CA 41C	3.40	T TRAFALGAR	CA 6A SEC 5	0.24
P MOOROOLBARK	PARTS CA 925A, 925B,E,F SEC Z	14.00	P WANDIN YALLOCK	CA 22A	0.95
P NANGANA	CA 43K	0.07	P WANNAEUE	PART CA A	8.27
P NARREE WORRAN	CA 127	16.00	T WESBURN	CA 36 SEC A	0.39
P NEPEAN	SOUTH OF CA 89	0.20	T WESTBURY	CA 1D SEC 3	0.21
P NEERIM	CA 162B	1.00	T WESTBURY	CA 1C SEC 3	0.18
P NEERIM	CA 164R	3.10	P WHANREGARWEN	CA 44E	3.26
P NEERIM	CA 164L	0.20	P WINDHAM	CA 21K NO SEC	0.25
P NEERIM	CA 36H	0.07	P WINDHAM	CA 21G NO SEC	0.25
P NEERIM	CA 82E	1.00	P YALLOCK	CA 10R NO SEC	0.28
P NEERIM	CA 86C 86D	0.20	P YALLOCK	CA 10P NO SEC	0.10
P NEERIM	CA 87A	0.10	P YALLOCK	CA 10M NO SEC	0.50
P NEERIM	CA 98A1	1.00	P YARCK	CA 64G	0.50
P NILLUMBIK	WITHIN CA 16 SEC 2	0.81	T YARRAGON	CA 8 9 SEC 5	2.11
P NILLUMBIK	ADJ CA 1 SEC 2	0.75	P YEA	CA 52H	0.25
T NOOJEE	PART CA 7 SEC 7	1.00	P YEA	CA 214D	0.75
T NOOJEE	CA 9 SEC 3	0.10	T YEA	CA 12A SEC 8	0.18
			T YEA	CA 12 SEC 28	0.78

Anderson Creek

In the recommendations of the Council's Latrobe Valley Special Investigation (October 1987), several areas were identified by the State Electricity Commission that are not currently required, but will be required for coal-related development in the future. One of these is a large parcel (1470 ha) on Anderson

Creek, which includes the site of a dump for overburden resulting from open cut development.

The Council's recommendations in 1987 provide that this area be available under lease from the SEC for use for agriculture or forestry, until required for coal-related development.

Anderson Creek

Recommendation

O2 That the area of 1470 ha at Anderson Creek be used for those purposes approved by the Government following publication of the 1987 final recommendations for the Latrobe Valley Special Investigation.

Note: Refer also to Recommendation K4.

Crib Point

The coastal foreshore reserve between Stony and Crib Points was included in Council's 1977 recommendations jointly as Coastal Reserve and Utility Reserve. Since those recommendations, the former Public Works Department purchased numerous blocks abutting this Coastal Reserve. Under planning scheme controls this area is zoned 'Proposed Port Purposes Reserve'. Although 14 small

lots remain in private ownership the majority of this area is now public land. However, as is discussed in Chapter M, this area is likely to become surplus to future port requirements.

Virtually all of the area north of Governors Road has been disturbed by development works, and is now proposed to be recommended as land not required for public purposes.

Crib Point

Recommendation

O3 That the land at Crib Point shown on Map E be used in accordance with the general recommendations outlined above for land not required for public purposes.

Note: This land may in the future be part of a buffer zone to possible industry on the former BP refinery site immediately to the north. The site has been sold and may be used for storage of imported crude oil, with deep water access from the existing jetty to the north.

Wonthaggi

The township area of the Borough of Wonthaggi contains extensive areas of public land. Much of this falls into three groups:

- (a) public purposes
- (b) open space/recreation
- (c) other uses including dwellings, car-parks, business premises, and vacant blocks.

In these recommendations Council has allocated land primarily on the basis of existing use. Land has been classified as not required for public purposes where it is presently used for private purposes, has no obvious public use, or is particularly suitable for urban or agricultural development.

A list of these blocks follows. Of particular interest is a large block, CA 1, Sec 75, on the eastern edge of the township, which has the potential to be subdivided to provide a substantial supply of residential land.

From a town planning perspective a 10 to 15

year land bank of suitably zoned land, based on current building permits or lot sales, would be considered desirable. Such a land bank exists at Wonthaggi at present. The majority of land being made available to date is freehold. Although development of the town has not been inhibited by the public land's being unavailable, it has caused it to grow in a particular direction. The most recent subdivision has been to the north, with the development of areas in the east, closer to the town centre, restricted. While the land bank is presently adequate, the Crown land at the east of the town will have an important part to play in its future development.

Those areas at Wonthaggi with public land values - historic sites, remnant vegetation, or used for formal recreation or municipal purposes - have been referred to in separate recommendations elsewhere in this report. The land referred to below could be made available for urban use, and in a few cases industrial or commercial subdivision. The Borough Council has commented that in the disposal of public lands, options for future green belts and public open-space requirements should be retained.

Wonthaggi

Recommendation

O4 That the areas at Wonthaggi listed in Table 25 below, and shown on Map C, be made available for alienation subject to:

(continued)

O4 - Wonthaggi (continued)

- (i) liaison with the Borough of Wonthaggi (responsible for the detailed planning for future land use in the areas)
- (ii) liaison with the Department of Planning and Development (with respect to possible public housing opportunities)
- (iii) release of the land being ordered, with priority given to land within or contiguous with the existing urban area

and

- (iv) the following guidelines:

- * all plans are to be consistent with any strategic plans for the township.
- * remnant vegetation is to be retained.
- * areas subject to subsidence hazard are not to be intensively developed.
- * public access links should be provided between the main blocks of retained public land (where appropriate utilising unused roads with remnant vegetation).
- * provision is to be made for local amenity open space areas.

Table 25

LAND AT WONTHAGGI FOR ALIENATION

Description	Area (ha)	Description	Area (ha)	Description	Area (ha)
Land in the Parish of Wonthaggi		CA 14 SEC 60	0.08	CA 11 SEC 31	0.18
WEST PART CA 34C	3.00	CA 1 SEC 75	77.66	CA 8 SEC 56B	0.10
CA 26G	25.00	CA 15 SEC 60	0.08	CA 12 SEC 31	0.18
CA 26F	29.89	CA 4 SEC 60	0.10	CA 29 SEC 56B	1.00
Land in the Township of Wonthaggi		CA 3 SEC 70	0.10	CA 13 SEC 31	0.18
CA 39 - 43 SEC 117	0.45	CA 19 SEC 70	0.10	CA 31 SEC 56B	0.10
CA 6 SEC 100	0.09	CA 2 SEC 60	0.10	CA 14 SEC 31	0.18
CA 4K SEC 117	0.19	CA 1 - 12 SEC 74	3.00	CA 5 SEC 63	0.25
CA 7 SEC 98	0.08	CA 16 SEC 60	0.08	CA 2 SEC 33	0.10
CA 15 SEC 86	1.80	CA 7 SEC 61	0.10	CA 9 SEC 63	0.20
CA 53 SEC 98	0.09	CA 8 SEC 61	0.10	CA 3 SEC 33	0.10
CA 4H SEC 117	0.30	CA 9 SEC 61	0.10	CA 1 SEC 69	0.10
CA 1 SEC 33	0.26	CA 10 SEC 61	0.10	CA 4 SEC 33	0.10
CA 4J SEC 117	0.21	CA 11 SEC 61	0.10	CA 18 SEC 69	0.10
CA 25 SEC 100	0.33	CA 32 SEC 56B	0.10	CA 5 SEC 33	0.10
CA 52 SEC 98	0.09	CA 33 SEC 56B	0.10	CA 15 SEC 64	0.10
CA 72 SEC 98	0.65	CA 4 SEC 63	0.36	CA 6 SEC 33	0.10
CA 73 SEC 98	0.03	CA 34 SEC 56B	0.10	CA 27 SEC 56A	0.11
CA 74 SEC 98	0.03	CA 6 SEC 63	0.20	CA 7 SEC 33	0.10
CA 1 SEC 89	0.81	CA 20 SEC 56B	0.10	CA 5 SEC 56B	0.10
CA 2 SEC 89	0.94	CA 8 SEC 63	0.20	CA 28 SEC 56B	0.10
CA 6 SEC 60	0.10	CA 21 SEC 56B	0.10	CA 30 SEC 2	0.09
CA 5 SEC 70	0.10	CA 10 SEC 63	0.20	CA 3 SEC 63	0.25
CA 13 SEC 64	0.10	CA 12 SEC 63	0.20	CA 14A SEC 5	0.13
CA 6 - 27 SEC 72	3.00	CA 23 SEC 56B	0.10	CA 11 SEC 63	0.20
CA 12 SEC 64	0.10	CA 2 SEC 69	0.10	CA 8 SEC 98	0.08
CA 6 SEC 60	0.01	CA 24 SEC 56B	0.10	CA 20 SEC 69	0.10
CA 4 SEC 70	0.10	CA 17 SEC 69	0.10	CA 14A SEC 107	0.56
CA 7 SEC 60	0.10	CA 25 SEC 56B	0.10	CA 3 SEC 56B	0.10
CA 18 SEC 70	0.10	CA 19 SEC 69	0.10	CA 3 SEC 3C	6.01
CA 8 SEC 60	0.10	CA 26 SEC 56B	0.10	CA 30 SEC 56B	0.10
CA 20 SEC 70	0.10	CA 14 SEC 64	0.10	CA 3 SEC 69	0.10
CA 9 SEC 60	0.10	CA 30 SEC 49	0.03	CA 17 SEC 64	0.10
CA 1 SEC 60	0.17	CA 16 SEC 64	0.10	CA 7 SEC 56B	0.10
CA 10 SEC 60	0.10	CA 31 SEC 49	0.10	CA 7 SEC 63	0.20
CA 3 SEC 60	0.10	CA 36 SEC 54A	0.07	CA 23 SEC 100	0.33
CA 11 SEC 60	0.10	CA 28 SEC 55	0.20	CA 20K,J,H,D,	5.67
CA 5 SEC 60	0.10	CA 28 SEC 56A	0.11	G,Q,R SEC 100	
CA 12 SEC 60	0.10	CA 7 SEC 31	0.18	PART CA 8 SEC 86	0.00
CA 1 SEC 70	0.10	CA 4 SEC 56B	0.10	CA 1,3,4 SEC 86	1.14
CA 13 SEC 60	0.10	CA 10 SEC 31	0.18	CA 6A,11 SEC 86	1.21
CA 17 SEC 70	0.10	CA 6 SEC 56 B	0.10		

P. MILITARY TRAINING

Council believes that military training is a legitimate use of public land, but is aware of the possibility of conflict arising with some forms of recreation and the protection of natural values. It is Council's view that military training should not occur in reference areas or wilderness areas, and only under special circumstances in parks and other areas of recreation and conservation significance.

The Minister for Defence may declare an area of public land to be a military training area, under the regulations to the *Defence Act* 1903, but only with the consent of the State authority responsible for the management of the land. The managing authority may also impose conditions of use on particular areas and these must be observed. Provisions for compensation for damage to assets or land also exist. No public land in Victoria is currently designated for military training purposes, however.

Exercises involving navigation and training with conventionally tyred vehicles and on foot conflict little with land management objectives and may even be permitted in some parks and other reserves. However, strict controls must be imposed on the use of heavy vehicles. Such controls may be in the area used and/or the nature of the use.

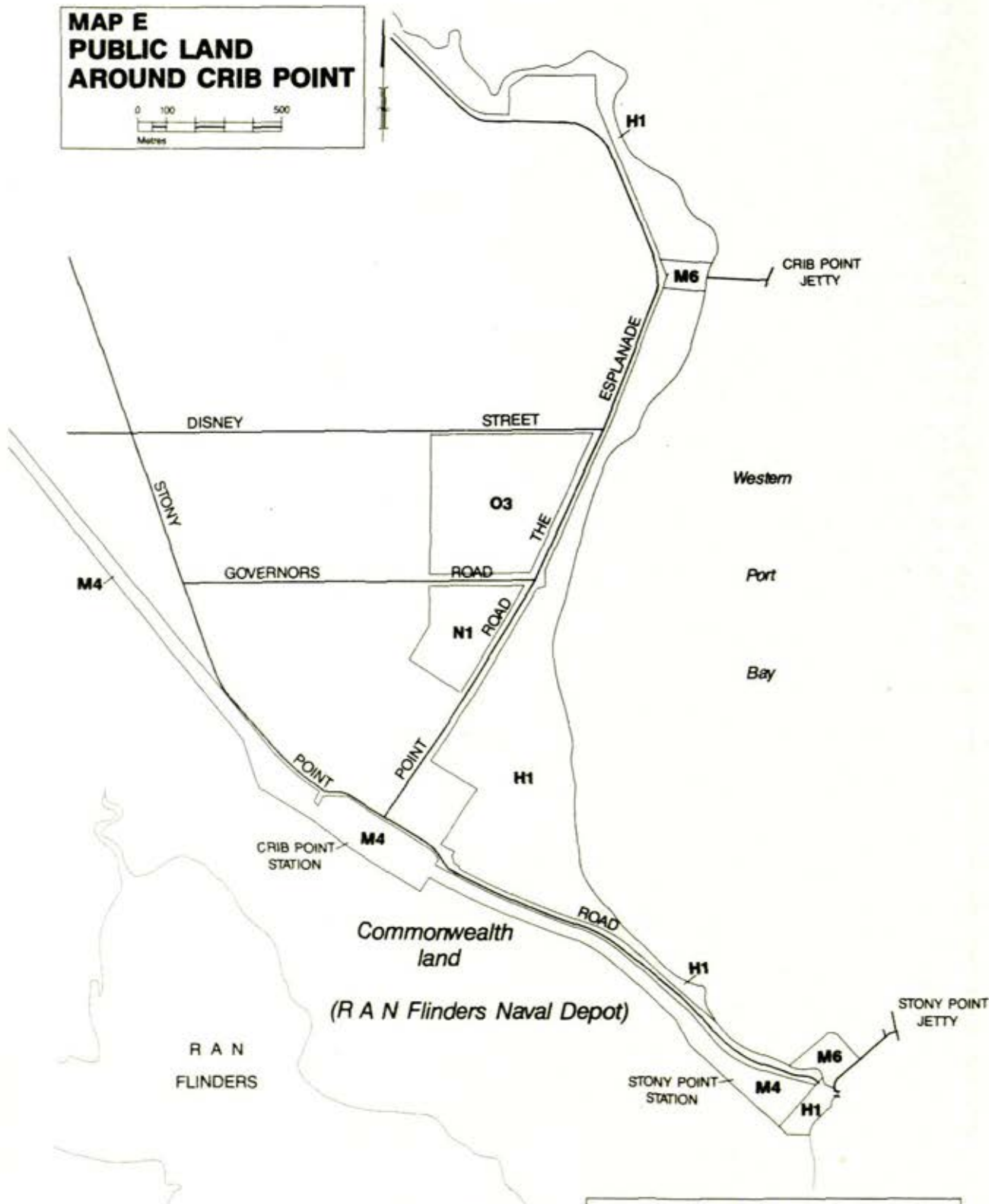
The Australian Army has conducted military training exercises in State forest and parks in an area extending from the Big River catchment to Cathedral State Park, in the Murrindindi River catchment, the Kinglake National park, and in the Tallarook State Forest. Activities undertaken included adventure training, navigation, bush craft, communications, and infantry exercises. Vehicular use involved three to five, four-wheel-drive vehicles and two to three 2.5- or 5-tonne trucks. Pyrotechnics and blank ammunition may be used in specific areas.

Recommendation

P1 That, where military training is conducted on public land:

- (i) the types of activities, and their timing and location, be subject to agreement between the Department of Defence and the Department of Conservation and Natural Resources and rehabilitation of areas damaged by military exercises be undertaken at the expense of the Department of Defence to the satisfaction of the Department of Conservation and Natural Resources
- (ii) the Department of Conservation and Natural Resources be consulted (for fire-protection purposes) with respect to training activities in protected public land
- (iii) it be excluded from reference areas, wilderness areas and, except where it does not conflict with the purposes of the reserve, from parks and other areas of recreation and conservation significance.

MAP E PUBLIC LAND AROUND CRIB POINT



NOTES: 1. The area between Disney Street and Stony Point Road contains 14 freehold allotments that are too small to show at this scale.
 2. Not all Public land in this area is shown.

LEGEND

Proposed recommendations

- H1** COASTAL RESERVE
- M4** STONY POINT RAILWAY
- M6** CRIB POINT AND STONY POINT JETTIES
- N1** UNCATEGORISED PUBLIC LAND
- O3** LAND NOT REQUIRED FOR PUBLIC PURPOSES

MAP E CRIB POINT

APPENDICES

Appendix I

LIST OF SUBMISSIONS

Name	Affiliation (if applicable)	Sub No
ABBOTT	C	1110
ABERNETHY	I.	1
ABRAMS	N	20
ACKERMAN	G	1028
ADAMS	A	759
ADAMS	D	762
ADAMS	E	785
ADAMS	E	885
ADAMS	G	786
ADAMS	H	745
ADAMS	J	765
ADAMS	N	760
ADAMS	P	746
ADAMS	T	965
ADAMS	V J & H M	292
ADLE	D.	1282
AGUIRRE	J.	794
AISTER	K	1078
ALDOUS	D.	581
ALDOUS	D.R.	1250
ALEN	J.	483
ALEXANDEL	R	1249
ALEXANDER	C.A	1225
ALLEN	A.L	153
ALLSOP	P.	10
ALSTON	J	1006
AMIS	A.	241
ANDERSON	B.Q.	263
ANDERSON	G.	982
ANDERSON	P.	149
ANDERSON	R.	301
ANDRAWARTHA	M	307
ANONYMOUS		915
ANONYMOUS		1208
ANONYMOUS		1214
ANONYMOUS		1218
ANONYMOUS		1219
ANONYMOUS		1220
ANONYMOUS		1221
ANONYMOUS		1224
ANONYMOUS		1227
ANONYMOUS		1228
ANONYMOUS		1233
ANONYMOUS		1234
ANONYMOUS		1235
ANONYMOUS		1243
ANONYMOUS		1246
ANONYMOUS		1251
ANONYMOUS		1253
ANONYMOUS		1256
ANONYMOUS		1258
ANONYMOUS		1263
ANONYMOUS		1264
ANONYMOUS		1265
ANONYMOUS		1270
ANONYMOUS		1271
ANONYMOUS		1274
ANONYMOUS		1275
ANONYMOUS		1276
ANONYMOUS		1277

Name	Affiliation (if applicable)	Sub No
ANONYMOUS		1278
ANONYMOUS		1279
ANONYMOUS		1283
ANONYMOUS		1287
ANONYMOUS		1289
ANONYMOUS		1295
ANONYMOUS		1296
ANONYMOUS		1298
ANONYMOUS	OAKGROVE LOGGING CO	36
ANONYMOUS		228
ANONYMOUS		393
ANONYMOUS		620
ANONYMOUS		1032
ANONYMOUS		870
ANONYMOUS		494
ANONYMOUS		206
ANONYMOUS		391
ANONYMOUS		394
ANONYMOUS		416
ANONYMOUS		830
ANONYMOUS		692
ANONYMOUS		791
ANONYMOUS		800
ANONYMOUS		946
ANONYMOUS		1031
ANONYMOUS		1037
ANONYMOUS		1122
ANONYMOUS		1157
ANONYMOUS		1215
ANTON	S	450
ANTON	S	120
ANTROBUS	S	597
APPLEYARD	B.	434
APPLEYARD	G.	308
APPS	T.	567
APPS	T.	121
ARMISTEAD	C.	585
ARNOTT	F.	3
ARTHUR	R	1167
ASBUYL	P.	1280
ASHBY	M.	271
ASHLIN	A.	633
ASHLIN	P.	454
ASKEW	S.	478
ASLING	G	1013
ASTON	D.G	309
ASTON	K.	485
ATKINS	A	110
ATKINSON	T.	310
ATWELL	K.A	88
ATWELL	M.	427
ATWELL	S.	428
AUSTIN	V.	411
AVERY	F.	637
BADI	H.M	1273
BAIEKLT	R.	642
BAILEY	F.	122
BAIRD & SWAN	B & A	25
BAITZ	L	13
BAKER	J.	1039
BALAMBE	G.	311
BALCOMBE	A.F.	409

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Name	Affiliation (if applicable)	Sub No
BALCOMBE A.J.		628
BALDWIN M.		950
BALFOUR M.		306
BALLANTINE D.		40
BALLANTYNE T.		913
BANNON Y.		914
BANTICK K.		107
BARBARINO A.		1072
BARBER D.		877
BARBER R.		838
BARBOUR S.		442
BARKER R.		413
BARKER S.		710
BARKER S.		1128
BARRET G.		61
BARTLETT P.		767
BAUM D.		819
BAXTER A.	VICTORIA ASSOCIATION OF FOUR WHEEL DRIVE CLUBS	278
BAXTER G.S.		689
BAXTER K.		193
BEACH C.		39
BEACH G.		41
BEASLEY I.		397
BEASLEY I.		995
BEASLEY M.		691
BEASLEY R.		690
BEAVIS G.J.		L23
BEAVIS V.J.		L24
BEBBINGTON D.		108
BECHAZ C.		312
BEDGGOOD A.E.		845
BEDGGOOD B.		846
BEDI G.		1209
BEEDELL V.		1240
BEER B. & K.		18
BEHRENDORFF R.		524
BELCHER L.		653
BELL A.		313
BELL D.		869
BELL J.		870
BELL R.L.		314
BELL T.		809
BELLENGER P.		1198
BELLMAN K.		882
BELLMAN R.		872
BELTON R.		501
BENNETT C.		315
BENNETT J.		1054
BENNETT L.		851
BENNETT M.		1129
BENNETT M.		L25
BENNETT R.G.		316
BENNETT S.		858
BENTLEY B.		631
BENTLEY P.	ALPINE RESORTS COMMISSION	152
BEONARSKI S.		497
BETHKE E.		1042
BETHKE J.		1051
BETHKE L.		1040
BETHKE P.		1041
BEZENCON R.E.		1067
BIGGS G.R.		545
BILTON S.		1083
BIRMINGHAM B.		1044
BLACHIE B.		317

Appendix I (continued)

Name	Affiliation (if applicable)	Sub No
BLACKIE G.A.		491
BLACKIE G.E.		488
BLACKIE K.		490
BLACKIE L.		489
BLACKMAN K.J.		L5
BLACKWOOD D.		138
BLACKWOOD G.		888
BLACKWOOD J.M.		859
BLACKWOOD N.		857
BLACKWOOD P.		860
BLAIK J.H.		835
BLAKE A.		516
BLAKE L.		L26
BLICK G.R.		1043
BLOOM G.		724
BLOYE T.		186
BOEHMKE H.		82
BOEHMKE M.		63
BOEHMKE P.		64
BOEHMKE R.		65
BOLTON C.		1247
BONTICK D.		89
BONTICK J.		90
BONTICK K.		91
BOON S.		1175
BOULTER R.		984
BOULTON D.		1002
BOURCHIER W.		537
BOURKE J. & P.		318
BOWEN T.		272
BRADY M.		636
BRASHER B.		319
BRAUSGROVE B.		458
BRAUSGROVE W.		459
BRAYSHAW G.W.	SHIRE OF AVON	L7
BREW B.		896
BREYDON G.	EMERALD TOURIST RAILWAY BOARD	248
BRIDGES J.		1131
BRIDGES S.		1097
BRIGGS R.		732
BRITTON L.		621
BRITTON R.		622
BROADBENT C.		661
BROADBENT T.		662
BROCKWAY Y.		755
BRODIE T.G.		776
BROOKS G.		L27
BROOKS R.	TIMBER MERCHANTS ASSOCIATION	273
BROOKS S.		480
BROUGHTON K.R.		1113
BROWN A.		1217
BROWN B.		584
BROWN D.		802
BROWN G.		320
BROWN H.G.	SYNDICATED CENTRAL GIPPSLAND LOGGING PTY LTD	185
BROWN K.		321
BROWN Q.		795
BROWN R.		643
BROWN S.		322
BROWN S.		323
BROWN S.G.		161
BROWNSCOMBE H.		527
BROWNSCOMBE H.J.	TIMBER PROMOTION COUNCIL	274
BUCHMANN G.		562
BUCKLEY G.		1079

Appendix I (continued)

Name	Affiliation (if applicable)	Sub No
BUDD	M	109
BURTON	H	445
BUTCHER	S	1194
BUTLER	W	1080
BUXTON	N	847
BYATT	M	904
CADDY	B	963
CADDY	H	547
CADDY	N	549
CADDY	R	551
CADDY	V	550
CAINE	J	192
CAINE	P	227
CAIRNS	D	816
CAIRNS	L	815
CAIRNS	M	817
CAMPBELL	G	453
CAMPBELL	I	128
CAMPBELL	J	295
CAMPBELL	S	324
CANTWELL	K	1000
CARDILINI	M	1089
CARDILINI	R	1090
CARRUTHERS	A	975
CARTER	B M	86
CARVE	P	1266
CASE	R	229
CASEY	A	258
CASHMORE	B	256
CATO	B	1180
CHADWICK	I	325
CHALMERS	C	813
CHALMERS	G	810
CHALMERS	J	811
CHALMERS	J	812
CHARLTON	M	1181
CHARLWOOD	E	949
CHIPPINDELL	R	42
CHRISTIAN	F	698
CHRISTIAN	G	926
CHRISTIAN	L	843
CHRISTIAN	T	181
CHRISTOPHER	C	807
CHRISTOPHER	G	977
CHRYSTIE	G S	98
CHRYSTIE	J	97
CHURCHYARD	A	11
CLARK	G	1094
CLARK	T	920
CLARKE	S J	326
CLAYTON	H	327
CLAYTON	W	881
CLIFFORD	I G	419
CLINCH	C	967
CLOSE	M	1261
CLOSTER	N	938
CLOSTER	R	937
COBB	P	110
COCKERELL	M S	220
COCKSHUTT	J	752
COCKSHUTT	R	731
CODE	E	174
COINCH	W	758
COLE	A	1093
COLE	B	705

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Name	Affiliation (if applicable)	Sub No
COLE	B	1177
COLE	F.D.	899
COLE	G.	1174
COLE	H	737
COLE	J	704
COLE	J	727
COLE	L	706
COLE	L	726
COLEMAN	N	463
COLLER	G	111
COLLIER	J	887
COLLINS	D & B	328
COLLINS	N	969
COMRIE	R	945
CONNAN	S	183
CONNELL	M	1191
CONNELLY	K	1019
COOK	K	479
COOK	K	130
COOK	N	129
COOPER	D	855
CORCORAN	S.T.	257
CORNWALL	B	536
COURTNEY	M A	114
COX	H.J.	863
COX	I & K	591
COZBILL	J	1254
CRAIG	S A	230
CRAIGIE	W G	187
CRANE	H	190
CRAWFORD	D.G.	528
CRAWFORD	H	300
CRAWSHAW	C	980
CROFT	G & E	613
CROPLEY	T	492
CROSBIE	J	1046
CROSBIE	P	1053
CRUTCHFIELD	R.W.	329
CULICAN	C	131
CULLING	D	1023
CULTON	B	1057
CULTON	D	1125
CULTON	J	33
CULTON	R I	1056
CUMBERLAND	L	1092
CUMBERLIDGE	R B	1172
CUMMINS	E	330
CUNDY	G	132
CUNNINGHAM	J	850
CUNNINGHAM	K	595
CUNNINGHAM	L	568
CUNNINGHAM	T	876
CUZENS	S	112
DAIR	W	1213
DALDY	S	1262
DALTON	G	1204
DALZIEL	L	237
DANCKART	I	1071
DANIELS	B	839
DARBY	K.J.	452
DARBY	R	455
DAVIES	G	1236
DAVIS	P	460
DAWSON	A	1286
DAWSON	C	67
DAWSON	L	1285

Appendix I (continued)

Name	Affiliation (if applicable)	Sub No
DEAN A.		1195
DEAN B. & W.		331
DEMBOY G.	ALEX DEMBOY TIMBER CO	228
DEMBOY J.		1138
DEMBOY K.		1135
DEMBOY M.		927
DEMPOY S.G.		1260
DEMPOY J.		585
DENNEHY L.		1171
DENNEHY M.		1102
DENNEHY R.		1170
DENNEHY S.		1104
DENNSHY L.		1150
DENT R.		87
DENTON P.		244
DESCHERPER C.		808
DEW S.		159
DICKENSON E.		398
DICKINSON A.		1038
DICKINSON L.		1029
DICKS G.		332
DIGHT B.		988
DONAHOE D.		333
DONKIN C.		133
DOUGLAS D.M. & R.		212
DOUGLAS R.		1079
DOWLING R.		583
DOWTON P.		493
DOYLE K.M.		31
DRAIN L.		1139
DREDGE E.A.		1299
DUBOUT P.		134
DUFF C.		886
DUGGLEBY B.		209
DUMPER B.		334
DUNCAN T.		1141
DUNNE J.		917
DUNNE J.		952
DUNNE P.		742
DUNSTAN M.		44
DUNSTAN M.		45
DUNSTON B.		1088
DUNSTON J.		43
DURAND J.		517
DURYEA L.		590
DYKE G.		335
EAVES D.M.		980
EDDY J.		489
EDDY J. & E.		577
EDWARDS J.		700
EDWARDS J.		782
EDWARDS R.		948
EICHLER J.		232
EIGNER R.		504
ELDER D.		528
ELDER G.		544
ELKI R.A.		955
ELNIN R.		923
ELTHAM L.		198
ERYFI P.I.		715
EVANS S.		1212
EWERT G.		99
EWERT N.		100
EXCELL D.C.	SOUTH GIPPSLAND CONSERVATION SOCIETY	231
EXTON G.		101

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Name	Affiliation (if applicable)	Sub No
EXTON S.		102
FAHROLDIN M.A.		211
FALKENBERG L.		400
FALKENBERG R.		525
FALKENBERG R.P.		401
FALLS P.		586
FALLS S.		473
FARRELLY S.		972
FASHAM I. & B.		817
FEHLBERG D.		1017
FEIL P.		1014
FENSHAM P.		189
FERGUSON D.		776
FIEDEL A.		548
FIELDING N.J.		399
FINDLAY M.J.		902
FISCHER J.		828
FISHER S.		922
FISHER T.	AUSTRALIAN CONSERVATION FOUNDATION	203
FISKE E.		48
FISKE J.		47
FISKE N.		48
FISKE R.		49
FITZGIBBON C.		719
FITZPATRICK J.		1181
FOGARTY		134
FOOT E.		1446
FOOTS S.		135
FORCIER G.A.		1300
FRANDSEN B.		758
FRANDSEN B.		761
FRANDSEN C.		733
FRANDSEN R.		738
FRANKISH D.		939
FRANKSTON P.		1088
FRASER D.B. & J.A.		34
FRASER I.A.		136
FRASER L.		156
FRASER M.		421
FREEDMAN E.V.		1185
FREEMAN D.		751
FRENCH C.		829
FRENCH D.		827
FRENCH H.		784
FRENCH J.I.		1232
FRENCH K.		828
FRENCH S.		830
FULFORD L.		906
FULFORD M.		907
FULLER C.		1189
FULLER D.		959
FURBOROUGH R.		1245
FURTH K.	AMTRA MOTORCYCLE TRAIL RIDERS ASSOCIATION	19
FURZE-MORRISH L.		882
FUSSELL R.		875
GALE A.H.		182
GALL G.		1085
GALLIEUR P.		1291
GAMBLE A.		909
GAMBLE N.		910
GANNON M.		449
GATES A.		589
GATES L.		598
GATES P.		556

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Name	Affiliation (if applicable)	Sub No
GENTLE S.		131
GEORGE M.		50
GERBES A.		768
GIBSON R.		259
GILES T.		438
GILHAM R.		513
GILMOUR C.		L37
GINN M.J.		1267
GLOVER F.		539
GODELL R.		714
GODENZI H.J.		523
GODENZI M.		894
GODING D.	J.L. GOULD SAWMILLS PTY LTD	246
GOHEISS T.		L51
GORDAM C.		1169
GORDAM D.		1168
GORDAM L.		1146
GORDAM N.		1103
GORDAM N.		1142
GORDES C.	FRIENDS OF FRENCH ISLAND STATE PARK	150
GORDON N.		601
GOSLAG S.G.		1269
GOSS J.		596
GOULD W.		498
GRAF P.		199
GRAF T.		262
GRAHAM M.		51
GRAHAM R.		52
GRAINGER J.		92
GRAINGER P.		93
GRAINGER S.A.		94
GRAX		1268
GRATION G.		720
GRAY I.F.		437
GREATOREX R.		579
GREEN A.		754
GREEN A.J.		584
GREEN B.		709
GREEN B.		880
GREEN C.		901
GREEN F.		757
GREEN G.		788
GREEN L.		753
GREGSON M.D.	DEPT OF MANUFACTURING & INDUSTRY DEVELOPMENT	264
GREGSON R.		846
GROSE P.T.	NEVILLE SMITH TIMBER INDUSTRIES PTY LTD	305
GUNNERSEN P.R.		275
GUNNERSEN T.H.		270
GYMER I.	MARBUT PTY LTD	1050
GYMER J.		1052
HAGEN J.		721
HAGEN M.		711
HAGEN W.		713
HAGGARD G.		1124
HAJDES J.		743
HALL D.		842
HALL D.C.		425
HALL S.		990
HALLAM H.		515
HALLAM R.		514
HANLEY J.		681
HANNON A.		831
HANNON J.		796

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Name	Affiliation (if applicable)	Sub No
HANRAHAN C.		808
HANRAHAN D.M.	RURAL WATER COMMISSION OF VICTORIA	252
HANSEN K.		944
HANSON G.		718
HANSON G.		750
HARLEY D.		148
HARRIS A.W.		457
HARRIS G.		433
HARRIS J.		164
HARRIS N.J.		678
HARRIS R.		614
HARRIS R.		1193
HARRISON G.		423
HARRISON M & E		138
HARROW T.		113
HASTHORPE C.		1016
HATCHELL-BROWN J.		680
HAWKEN R.		482
HAWKEN R.J.	LATROBE REGION WATER AUTHORITY	L1
HAWKINS K.		441
HAWKINS N.		175
HAWTHORNE R.		53
HAY B.		833
HAY B.		1162
HAY B.		1164
HAY L.		1165
HAY R.		1163
HAYCRAFT J.		54
HAYMAN & YOUNG P & J.		L38
HAYWOOD K.		114
HEAD L.		772
HEARN C.W.		578
HEBBLE A.		426
HEENAN L.		418
HEIL P.		797
HEIL R.		798
HEMPENSTALL P.		L39
HENDERSON G.		987
HENLEY J.		L40
HENRY A.		666
HENRY P.		1063
HERITAGE R.F.		667
HERON J.		475
HERON J.		503
HERON R.		456
HESKETH L.		277
HIBBERT D.		468
HIBBERT N.		439
HIBBUT D.		337
HILL A.		693
HILL D.		520
HILL G.		707
HILL I.		931
HILL M.		777
HILL N.		769
HILL R.		592
HILL R.		593
HILL S.		702
HILL S.		1030
HILLIER I.		890
HINCHCLIFFE D.		1138
HINCHCLIFFE J.F.		1062
HINCHCLIFFE R.		1081
HOCKING G.L.		448

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Name	Affiliation (if applicable)	Sub No
HODGSON C.		1147
HODGSON G.		1114
HODGSON J.		1099
HODGSON J.		1111
HODGSON J.		1152
HODGSON P.		1105
HODGSON T.		1112
HOLLINGWORTH N.G.		506
HOOK		205
HOPPNER C.		1173
HORAN B.		L41
HORAN C.		L42
HORAN T.		L43
HORGAN J.T.	STATE ELECTRICITY COMMISSION OF VICTORIA	235
HORT B.		1066
HOSKIN C.		115
HOULT A.		840
HOULT J.		841
HOUSE R.	HEALESVILLE HERITAGE WATCH	15
HOWIE D.		648
HULME S.		1143
HUMPHREYS B.		55
HUNT B.		392
HUNT L.C.	DROUIN WEST SAWMILL PTY LTD	242
HUNTER B.		1107
HUNTER G.	ENVIRONMENT PROTECTION AUTHORITY	179
HUNTER J.		1144
HUNTER J.R.		180
HUNTER K.		1130
HUNTER S.		1108
HUNTER S.		1115
HUNTER T.		1096
HUON G.N.	VICTORIAN ASSOCIATION OF FOREST INDUSTRIES	247
HURLE P.		554
HURLEY A.		447
HUTCHISON S.		1045
INGLEFINGER L.		1027
INGLEFINGER R.		1026
INIFER L.J.		674
JACK G.		1096
JACKSON L.		338
JACKSON N.		511
JAGGINS M.T.		1188
JAMES G.C.		974
JAMES K.		1034
JAMES T.		1038
JAMIESON S.		116
JANSEN T.		68
JEFFREY D.		557
JELINEK A.		167
JENNINGS A.W.		339
JENSEN D.		654
JENSEN R.		655
JESBIN N.		925
JEWELL G.		921
JOHNSON P.		994
JOHNSTON J.		69
JOHNSTON N.		70
JOLLY W.		1123
JONES B.		L44
JONES G.		991
JONES G.		1055
JONES M.E.		627

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Name	Affiliation (if applicable)	Sub No
JONES P.		541
JONGEBLOED M.		486
KABOLLE D.		943
KAehler J.W.		900
KAIPS P.		1203
KANICKY G.		847
KANICKY L.		883
KARAMBALIS J.		879
KATGERT C.		56
KATGERT C.		1064
KATGERT D.		57
KATGERT S.		58
KATGERT S.		59
KEE A.	CENTRAL GIPPSLAND FOREST MANAGET ADVISORY COMMITTEE	L12
KEE K.		504
KELDERMAN G.		1201
KELLEN J.		103
KELLOW J.		435
KELLS J.		560
KELLS S.		566
KELLY G.		1047
KELLY H.		35
KELLY H.& C.M.		145
KELLY K.F.		887
KELLY T.		673
KEMLELL J.H.		634
KEMP D.	VICTORIA ASSOCIATION OF FOUR WHEEL DRIVE CLUBS	278
KENNEDY M.		748
KERR A.		L45
KERR S.		1106
KILLEEN R.		650
KILLEEN S.		142
KINE-WILL P. & J.		129
KING T.		117
KINHMANN H.J.		385
KIPPING T.		L46
KIRLEY A.		867
KIRLEY A.		L47
KIRLEY B.		L48
KIRLEY J.G.		820
KIRLEY K.		L49
KIRLEY M.		823
KIRLEY P.		806
KIRLEY R.		822
KIRLEY T.		L50
KIRLEY V.		821
KIRLEY W.		L52
KIRLEY Z.C.		L53
KOSNAR G.		340
KRAFT C.		5
KRAFT J.		4
KRANT D.		775
KREWSE M.		118
KROONABELIG J.		1230
KROUWER J.L.		341
KRYGSMAN M.		293
KUPPERS P.		968
LACEY P.	NORTH RIDING COMMUNITY ACTION GROUP	294
LADNER I.F.	BONANG TIMBERS PTY LTD/FREDK. LADNER PTY LTD	276
LANGFORD G.		1197
LAPPEN S.		1075
LARAGY C.		6
LASEN P.M.		1297

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Name		Affiliation (if applicable)	Sub No
LAVAYSEY	D		1281
LAVERY	P.		897
LAVRYSSSEN	S.		1290
LAW	T.		137
LAY	C.J.		553
LAY	J.H.		290
LAY	S.J.		581
LEE	D.N.		7
LEED	Q.		543
LEEHAINE	C.		119
LEEHAINE	K.		120
LEEHAINE	P.		121
LEEHAINE	S.		122
LEEMBRUGGEN	S.	SAVE THE DANDENONGS LEAGUE INC	225
LEESON	G.		123
LEESON	G.		594
LEESON	V.		124
LENG	M.		254
LENNANE	R.		891
LEWIS	A.		154
LEWIS	B.		1080
LEWIS	G.		487
LEWIS	P.		989
LEWIS	W.	A. LEWIS & CO PTY LTD	279
LIE	L.		600
LINDSEY	B.		216
LINES	S.		172
LITHGOW	M.		1186
LITTLEJOHN	D.		1025
LLOYD	R.		874
LOCK	L.		296
LOMAX	H.R.	SHIRE OF SOUTH GIPPSLAND	111
LOMBARD	J.		1200
LONG	B.		1134
LONG	J.		395
LOUEY	E.		202
LOVEDAY	J.M.		1059
LOVERIDGE	R.		1223
LOVETT	P.		1033
LOVIS	J.		1284
LOWIS	J.T.		1239
LOWRY	I.		892
LOY	K.		342
LUCKMAN	A.		207
LUKE	J.		343
LUSH	G.	SHIRE OF BROADFORD	147
LUTMAN	B.A.		408
LYNCH	D.		1205
LYNEL	N.		440
MACDONALD ET AL	J.		116
MACFARLANE	D.B.	AUSTRALIAN PAPER MANUFACTURERS	268
MACKINTOSH	C.		998
MACKLIN	L.K.		349
MACPHERSON	P.		970
MADDEN	C.		521
MADELEY	G.D.&P.V.		233
MAGDA	D.		1231
MAHONEY	G.		886
MALCOLM	J.		60
MARGETTS	F.		983
MARION	R.		1237
MARNELL	C.E.		1229
MARSHALL	A.		773
MARSHALL	D.		825

Appendix I (continued)

Name		Affiliation (if applicable)	Sub No
MARSHALL	D.		1202
MARSHALL	J.		403
MARSHALL	M.		477
MARSHALL	M.		836
MARSHALL	P.		763
MARSHALL	P.J.		157
MARSHALL	S.		787
MARSHALL	W.		771
MARTIN	G.		962
MARTIN	J.		158
MARTIN	K.		223
MARTIN	N.		574
MARTIN	N.		1252
MARTIN	P.		159
MARTIN	P.		160
MARTIN	T.		1182
MARTINI	G.		125
MARTINI	P.	THE OUTDOOR ACTIVITIES GROUP INC	240
MARTINO	C.		14
MASON	G.		161
MASON	M.		530
MASON	P.		162
MASON	T.		529
MASTERS	A.		533
MASTERS	B.		163
MASTERS	L.		532
MASTWYK	J.		1007
MATHEWS	C.		679
MATHEWS	J.		664
MATHEWS	P.W.		191
MATHEWS	S.		677
MATHIESON	P.		973
MATTERS	J.		282
MAUDE	L.		350
MAXWELL	A.		146
MAXWELL	B.		688
MAXWELL	M.L.		1255
MAY	M.		261
MEER	G.		1003
MELVILLE	D.		893
MEMBREY	D.		512
MENZ	P.		126
MEYDAN	M.		412
MEYERS	C.		1091
MICAH	J.		582
MICAH	P.J.		518
MICAH	R.		351
MICAH	S.		583
MICAH	W.H.&M.E.		519
MILDREN	A.		873
MILDREN	E.B.		905
MILDREN	M.		875
MILES	J.		898
MILES	L.		697
MILL	R.		641
MILLER	K.&V.		546
MILLS	G.		542
MILS	K.L.		540
MILTON			164
MINER	T.	RECREATIONAL FISHERIES COUNCIL OF VICTORIA	166
MITCHELL	A.		26
MITCHELL	A.	BIRD OBSERVERS CLUB OF AUSTRALIA	195
MITCHELL	B.		747

Appendix I (continued)

Name	Affiliation (if applicable)	Sub No
MOBNEY D.		1149
MOLENBERG M.		864
MOLLISON M.		402
MOLONEY D.		685
MOLONEY D.		1151
MOLONEY G.		1101
MOLONEY I.		683
MOLONEY P.T.		684
MOLONEY T.		1100
MOODY C.		291
MOON G.		807
MOON J.		1018
MOONEY R.		712
MOOR K.		818
MOORE D.		1248
MOORE L.B.		845
MOORE M.J.		352
MORAN G.	MORAN LOGGING COMPANY	32
MORAN G.		286
MORGAN L.		104
MORLEY D.		1022
MORRIS N.G.		287
MORRIS N.W.		1207
MORRIS P.		239
MORTER C.		919
MOULTON A.		430
MOULTON G.		431
MOULTON M.		353
MOULTON P.		354
MOULTON P.S.		355
MOULTON T.		356
MULLER B.		781
MULLER G.		957
MUMFORD H.		165
MURATORE C.		779
MURATORE J.		717
MURATORE K.		780
MURATORE P.		716
MURGIA G.		27
MURMANE B.S.		357
MURPHY M. & C.		505
MURRAY H.		283
MUSGROVE L.		1084
MYER W.		814
McCAFFERTY B.		344
McCALLUM R.		285
McCARATHY R.		345
McCONACHY G.		701
McCONACHY G.		837
McCONNARCHY		1127
McCONNACHIE N.		801
McCORMACK G.	McCORMACK TIMBERS PTY LTD	245
McCORMACK L.D.		988
McCRAITH A.		1241
McDIARMID D.		470
McDIARMID P.		432
McDONALD C.		858
McDONALD R.		570
McDONALD R.A.		155
McDONALD S.		1288
McDONOUGH M.		443
McELROY S.	SHIRE OF YEA	280
McFADZEAN E.		404
McFARLANE R.		1244
McGARRY P.		346
McGENNISKEN D.		1012

Appendix I (continued)

Name	Affiliation (if applicable)	Sub No
McGUIRE A.		799
McINNES K.G.		236
McINNES R.		508
McKEE L.		871
McKENZIE A.		1061
McKINNELL R.		618
McLEAN J.	PUBLIC TRANSPORT CORPORATION	13
McLEISH L.		1128
McLEOD K.		156
McMAHON G.		347
McMAHON R.		157
McMAHON S.		348
McMAHON S.		500
McNAMARA K.		1035
McNULTY D.	RYAN & McNULTY PTY LTD	281
McPHERSON R.		1153
NENN J.		219
NEWELL P. & I.		993
NICHOLS P.M.		872
NIGHTINGALE M.		749
NIKOLAJEN P.		849
NORMAN E.C.		358
NORTHOVER C.S.	TIMBER INDUSTRY COUNCIL	250
NORTON P.		197
O'BRIEN P.		1058
O'CONNOR J.		424
O'HALLORAN P.		186
O'HARA T.	MARINE RESEARCH GROUP	304
O'NEILL G.		188
O'NEILL P.		187
O'NEILL S.		933
O'RYAN K.		576
O'SHEA F.B.	O'SHEA & BENNETT SALES PTY LTD	284
O'SULLIVAN J.		1120
O'SULLIVAN R.		1087
OFFICER C.		169
OGILVIC H.G.		154
OLDHAM B.D.		1206
OLDHAM B.L.		1199
ORCHARD S.		848
ORCHARD W.		838
ORR N.		884
PAGE L.		484
PALMER J.		860
PALMER R.		859
PANCKHURST M.		916
PAPWORTH F. & P.	MUNIDUE OUT-BACK APIARIES	17
PARKER D.		189
PARKER J.		71
PARKER L.		72
PARKER M.		1272
PARKES K.		632
PARKINSON M.		105
PATERSON G.		736
PATERSON A.		739
PATERSON S.		723
PATTINSON J. & L.M.		580
PEACHEY J.		170
PEACOCK K.		935
PEACOCK P.		934
PEAKE G.		888
PEARCE G.		467
PEARCE G.		1011
PEARSON B.		499
PECK J.		1076
PECK J.		1159

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Name	Affiliation (if applicable)	Sub No
PECK L		1077
PECK R		1187
PECK V		1160
PEIRCE S		12
PEMBERFAL J		1293
PENNY O		213
PENROSE J		940
PERRY P.W.	P.W.L. PERRY PTY LTD	238
PETERS D		127
PETERS G		128
PETERSEN G		285
PETERSEN G	UPPER YARRA CONSERVATION SOCIETY	286
PETERSON J		930
PHILLIPS B		1156
PHILLIPS D.B.		133
PHILLIPS H		171
PHILLIPS P.W.	SHIRE OF BULN BULN	L 6
PHILLIPSON M		744
PICKNELL S		979
PIERCE G		868
PIETSCH E.C.	BOX HILL NORTH PRIMARY SCHOOL	269
PINCOMBE J		558
PITCHER J		703
PITCHER J		741
PLATT K		6
POON L		629
POPE R		22
POPLAR B.M.		1210
PORTER L		1137
PORTMAN G & L		162
POSTILL J		575
POTT R		640
POTTER L.M.		73
POTTER M		74
POTTER S.W.		75
PRATT G		1024
PRATT R		571
PRESTON M		695
PRICE S		9
PRIESTLY D		253
PRITCHARD G & D		359
PRITCHARD R		1222
PRITCHETT L		130
PROVAN A		155
PRZESTASZEWSKI T		420
PUMPA J		572
PURVIS V		210
QUINLAN E		299
RADFORD C		625
RADFORD K & P		623
RADFORD & DUNCAN M & D		626
RALPH E.M.		380
RALPH R		361
RAMM T		462
RANDALL R		729
RASTALL C		793
RATCLIFFE J		76
RATCLIFFE J		77
RATCLIFFE K		78
RATCLIFFE S		79
RATTEN B		362
RAWSON D		1001
RAYMOND O		163
RAYMOND O.H.		405
READ P.L.		95

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Name	Affiliation (if applicable)	Sub No
REED M		80
REED W		81
REEVES S		406
REID A		861
REID C		986
REID T		363
REILLY J.M.		224
RENDELL J		790
RENNICK S		303
REXHEP A		603
RICARDO J		656
RICHARDS A		612
RICHARDS C		1004
RICHARDSON A		260
RICHARDSON S		1216
RICKARD L		1198
RIDGWAY B		267
RIMMER D	FEDERATION OF VICTORIAN WALKING CLUBS (VICWALK)	188
RITCHIE R		298
ROBERTON N		766
ROBERTS P		364
ROBINSON B		805
ROBINSON B		889
ROBINSON B		929
ROBINSON G		936
ROBINSON G & B		912
ROBINSON J		725
ROBINSON M		365
ROBINSON T		961
RODAUGHAN K		366
ROGERS C		1192
ROGERS D		1118
ROGERS P		1073
ROGERS S		1121
ROGERS W		1066
ROHDE H		L 8
RONALDS P		367
ROOKS C		1292
ROTE N & L		200
ROWDEN J		965
ROWE G		941
ROWE T		726
ROWLER S		1294
ROZENBERG A	SHIRE OF HASTINGS	140
RUDGE C		465
RUNDALL R		956
RUSSELL R		476
RUTHBERG C		644
RUUCEVICH L		911
RUUCEVICH M		908
SAGEBREACH L		932
SANDERS J		407
SANDERS R.J.		819
SAUNDERS B		1048
SAUNDERS D		1049
SAUNDERS J		429
SAVAGE R		669
SAWERS A.J.		461
SCHELLEN W		368
SCHELTEN H		803
SCHMIDT E		1069
SCHMOLLING M		204
SCHOLLES I	SHIRE OF HEALESVILLE	173
SCHWAB K		269
SCOTT O		180
SCOTT P	MELBOURNE WATER	

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Name	Affiliation (if applicable)	Sub No
SCOTT W.	TOOLANGI FOREST CAMP	369
SEM R.		708
SEXTON P. & J.		176
SHADDOCK G.A.		16
SHANNON S.		471
SHAW N.		208
SIDDLE P.		502
SIGHT V.A.		464
SILVERI L. & D.		L4
SILVESTER B.		538
SILVESTER D.		L71
SILVESTER D.		L73
SILVESTER G.		615
SILVESTER J.		135
SILVESTER R.		531
SILVESTER R.		L72
SILVESTER S.		472
SIMS F.		82
SISSON J.		L74
SKEELS C.		466
SKINNER D.		999
SLEE K.J.		2
SLOAN ET AL S.E.	PASCOE VALE FIELD NATURALISTS CLUB	184
SLOCOMBE S.		1183
SMITH C.G.		177
SMITH D.R. & S.A.		370
SMITH G.		23
SMITH H.E.		196
SMITH J.		587
SMITH L.C.		507
SMITH M.		410
SMITH R.		1010
SMITH S.		997
SNEDDON J.		895
SNODGRASS G.		722
SNODGRASS J.		734
SOCCIO A.		1109
SOCCIO A.		1146
SOCCIO B.		1133
SOCCIO J.		694
SOCCIO K.		1145
SOUTH J.	AUSTRALIAN DEER ASSOCIATION	899
SPENCE B.		201
SPONG D.		857
STAFFORD A.		96
STAFFORD ET AL M.		251
STALLARD M.		676
STANTON J.		953
STEG K.		871
STEPHEN R.M.		170
STEPHENS A.		824
STEPHENS M.B.		L9
STEVENS A.M.		616
STEVENS B.		651
STEVENSON D.		249
STEVENSON D.		288
STEVENSON D.A.		371
STEVENSON J.D.		372
STEVENSON K.		373
STEVENSON M.G.		374
STEVENSON S.L.		375
STEVENSON T.M.		376
STEWART G.		377
STEWART J.R.		1211
STILBORN R.A.		166

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Name	Affiliation (if applicable)	Sub No
STILLWELL E.	CITY OF MORWELL PROSPECTORS AND MINERS ASSOCIATION OF VICTORIA	L75
STODDART D.		378
STOLL J.		509
STOLL J.D.		510
STOLL K.		306
STOLL T.		658
STORIE S.		379
STORIE S.		380
STUART S.		1021
STUCHLY P.		789
SUND M.		1062
SUNDERLAND S.		802
SUTHERLAND F.		L18
SUTTON D.		218
SWALE A.G.	PAJERO 4WD CLUB OF VICTORIA WESTERNPORT REGIONAL PLANNING AND CO-ORDINATION COMMITTEE AUSTRALIAN NATIONAL UNIVERSITY SHIRE OF ROSEDALE	415
SWAN A.M.		215
SYKES G.		1009
SZEPOS M.		888
TANSEY R.		L88
TANSLEY M.		165
TANTON M.T.		234
TATTERSON P.L.		L13
TAYLOR J.		243
TEMPLE J.		L78
TEMPLETON P. & T.		624
TESTA S.S.		522
THEGE R.D.		144
THOMAS W.		414
THOMPSON O.	LATROBE VALLEY FIELD NATURALISTS	24
THOMPSON R.		381
THOMSON J.		978
THOMSON R.		1190
THORN I.		774
THORNTON J.		854
THORNTON P.		853
TJEPKEMA P.		866
TOAN P.R.		382
TOMKINS G.W.		496
TONKIN R.		L77
TORMEY L.		1158
TOWNSEND C.		L2
TRAILL B.		255
TRAYNOR S.		1184
TRELOAR D.		1119
TRELOAR R.		1085
TREWIN G.		535
TREWIN P.		534
TUNSTALL G.		835
TURTON-LANE E.J.		481
TWITE A.		1155
TWITE I.		1154
TYRRELL R.		954
UREN C.		1074
VAN BAALEN A.		495
VAN BAALEN C.		436
VAN DE VEN M.		15
VAN DEN DOLDER A.J.		417
VAN DEN DOLDER W.		552
VAN DER BURGT M.		852
VANDER BURGT D.		611
VANNI O.		28
VANNI S.		29
VANNI W.		30

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Name	Affiliation (if applicable)	Sub No
VELLA	G	976
VENEMAN	W	383
VENNIX	L	384
VENUTO	G	958
VICKERS	A	809
VICKERS	R	608
VIOS	J	1132
VIVIAN	E	573
VIVIAN	E A	1257
VOGEL	J	1179
VORNELL	J	474
WADE	R	996
WADE	S	682
WAIN	G & S	106
WAIN	R	639
WAIXEL	G	1166
WALKER	A J	1117
WALKER	C	168
WALKER	J	1238
WALKER	P	178
WALLACE	R P	221
WALLBRIDGE	J	863
WARD	D	947
WARD	Y W	179
WAREHAM	A	559
WARHURST	G P	180
WARREN	P J	1140
WASHFOLD	K	865
WATKINS	G	1020
WATSON	C	1116
WATSON	R J W	422
WATTS	M	942
WEAVER	H	804
WEBB	A	194
WEBB	D	865
WEBBER	R	951
WEBSTER	A J	386
WEEKS	B	784
WEEKS	M	783
WEEST	C	770
WENTWORTH	S	178
WESCOTT	G	302
WEST	J F	83
WEST	K A	84
WESTBURY	D	832
WESTBURY	K	834
WETTENHALL	D	222
WHITE	D	1178
WHITE	D	187
WHITE	G	971
WHITE	K	1015
WHITEMAN	P H	143
WHITEMAN	P H	151
WHITMORE	B	387
WHITTY	A & M	1176
WICKINS	B	981
WIEGEL	K	1242
WIERSEMA	B	928
WIGG	K	336
WIGG	R	388
WILBOUGHLEY	S	451
WILLIAMS	A	158
WILLIAMS	D	37
WILLIAMS	E T	1008
WILLIAMS	G	85

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Name	Affiliation (if applicable)	Sub No
WILLIAMS	K	L19
WILLIAMS	S	86
WILLIAMS	S	792
WILLIAMS	W	38
WILLIAMSON	A	L82
WILLIAMSON	A S	610
WILLIAMSON	G	L81
WILLIAMSON	R	804
WILLOUGHBY	G	21
WILMOT	L M	207
WILSMORE	C A	844
WILSON	E	444
WILSON	L	139
WILSON	T	918
WINTER	J R	217
WINTER	S	878
WINTERTON	D	389
WITNISH	C	740
WOELTJES	R	992
WOJEINSKI	L	132
WOOD	C	L83
WOOD	D	L84
WOODHOUSE	G	555
WOODHOUSE	G	1259
WOODS	E	924
WOODWARD	S	390
WOOLLARD	P B	849
WORTHINGTON	P	599
WOZNAK	J	652
WRIGHT	G	141
WYKES	E A	214
WYND	G	735
YATES	K	1005
YOUNG	C	589
YOUNG	J	588
YUILLE	D	L85
ZACHER	C	605
ZIENTEK	A	1226

Appendix II

SUMMARY OF BENEFITS AND COSTS OF THE PROPOSED RECOMMENDATIONS

	BENEFITS	COSTS
Increased maintenance of flora and fauna and other conservation values	The economic value associated with the maintenance of flora and fauna in the proposed park (particularly in the catchments and at Lake Mountain) would be substantial; however, it has not been possible to estimate the degree to which such maintenance would be achieved from National Parks status	n.a.
Timber production foregone	n.a.	Estimated to represent a net value to the economy of \$260K to \$460K per year plus social implications
Increased water yield	Possible, but negligible	n.a.
Forest management costs foregone	Present, but likely to be relatively small	n.a.
Increased recreation in catchments	Possible, largely at discretion of park manager	n.a.
Change in number of visitors to Lake Mountain	Possible	Possible
Increased skiing at Mount Baw Baw	Likely, but not able to be quantified	n.a.
Earth resources	n.a.	Possible cost by way of foregoing potential developments (other than existing licences)
Foregone recreation	n.a.	Possible effects in link areas, but likely to be negligible
Change in extent of deerhunting	Present	Present
Increased visitors to Eildon State Park due to prohibition of deerhunting	Possible	n.a.
Loss of grazing in Bunyip State Park	n.a.	Present but very small
Costs of establishing and managing areas as Park/Reserve	n.a.	discretionary
Foregone costs of policing Central Highlands Sanctuary	Present, likely to be small	n.a.

Extract: Henshall Hansen Associates and Read Sturges and Associates (1993); A Social and Economic Impact Assessment of Draft Proposed Recommendations for Land Use in the Central Highlands (Melbourne Area District 2), Victoria.

Appendix III

INTERPRETATION OF THE THOMSON CATCHMENT STUDY

To put the results of the Thomson River catchment economic study in context, the \$147M estimated benefit of the no logging option, for example, is about 7.8% of the total net present value - \$1887M - of water and timber under the *status quo*. While indicating the scale of the benefit, that calculation is not strictly valid, as in deriving their estimates for the various options, the consultants constructed only partial budgets. Relevant costs were estimated to enable comparisons between options, but they were not all the costs.

The consultants' analysis and results indicate the pre-eminent value of domestic water. The net present values of future water (\$1804 million) and harvested timber (\$82M) for the

status quo option over the next 200 years, illustrate this. The following table, derived from figures in the consultants' report, shows that using average figures for water and timber yields, prices and gross returns expressed in the same units, the yield in cubic metres or kilolitres of water per hectare is much higher than timber. Water's per-hectare value is far higher, even though the unit price of water is much lower than timber. Also shown in the table is the current water yield and the expected yields under two timber harvesting options - *status quo* and no logging. In 100 years' time the no logging option would result in a 27% increase in flows, instead of the 1% decrease expected with the *status quo* option.

TIMBER AND WATER YIELDS AND VALUES

Thomson Catchment Study

Option	Yield (cu.m/ha/yr)	Price ¹ (\$/cu.m)	Gross return (\$/ha/yr)
Water			
Urban water yield - 1992	3530	0.53	1871
Yield with <i>status quo</i> - 2092	3480	0.53	1844
Yield with no logging - 2092	4499	0.53	2384
	Yield (cu.m/ha/yr)	Price ³ (\$/cu.m)	Gross return (\$/ha/yr)
Timber			
	2.47 ²	60 (A,B grade ash logs) to 10 (pulpwood)	65 ⁴

Notes:

1. Consultants' 'base case' price. One cubic metre equals one kilolitre.
2. Weighted average of annual growth increments for all harvestable species from net productive area, sawlogs plus pulpwood, for whole catchment (from DCNR data).
3. Consultants' timber prices.
4. Gross timber return is an average, weighted according to the proportion of each forest type, regional sawlog grade recoveries, and average pulpwood yields.

Given these estimates, it is not surprising that the value of the flow increases that would arise gradually from the ageing of unlogged ash, or from the establishment of cleared corridors, would be expected to exceed the timber values in this study.

Mixed species forests

The consultants have assumed, using published material, that run-off from logged mixed-species forests would show similar behaviour

to ash forests - that is, after a brief initial increase a decline in run-off to about half the mature forest run-off rate, with gradual restoration to pre-logging run-off levels after about 150 years. Mixed species forests are found on drier sites than ash forests, and have lower yields of from 1 to 3 ML/ha/yr.

Recent unpublished work by the Department of Conservation and Natural Resources on the hydrology of silvertop mixed-species forests at Reefton indicates that, in contrast, a small increase in flow observed after logging has been sustained for 8 years. At Yambulla in New South Wales, preliminary hydrological results following logging in a mixed species forest show an increase, returning to pre-logging flows after 4 years. However if the mountain mixed species forests in the Thomson catchment were given full regeneration treatment and a 'wheatfield' stocking of regrowth resulted, it would be expected that hydrological behaviour similar to ash forests would follow. More work is required in this area to better assess the implications for the Thomson catchment.

Harvesting schedule

When considering the timber harvesting options, it is helpful to look at the likely harvesting schedule. Under the *status quo*, the Department has indicated that harvesting would continue from the present, with some 176 ha per year of ash being logged over the next 50 years, followed by 138 ha per year thereafter. The 120-year and 200-year rotations could be implemented by harvesting less area per year, one-120th (92 ha) and one-200th (55 ha) of the net productive area of ash in the catchment respectively, so that the next forest rotation is at a true 120-year or 200-year tree age.

Reference

Read Sturgess and Associates, La Trobe University Resource and Environmental Economics Group, and Arthur Webb and Associates (1992). Evaluation of the economic values of wood and water for the Thomson catchment. *Report to Melbourne Water and the Department of Conservation and Natural Resources.*

Appendix IV

PHYSICAL AND CHEMICAL WATER QUALITY

Percentage of non-metropolitan population receiving water which did not meet WHO (1984) guideline values between 1984 and 1989.

Parameter	Guideline values	Percent population	Health significance	Aesthetic
Acidity	> 8.5 pH	< 1%		*
	< 6.5 pH	2%		*
Colour	> 15 True Colour Units	43%		*
Turbidity	> 5 Nephelometric Turbidity Units	9%		*
Total Dissolved Solids	> 1000 mg/L (1500 Ec)	< 1%		*
Hardness	> 500 mg/L	< 1%		*
Chloride	> 250 mg/L	2%		*
Sodium	> 200 mg/L	2%		*
Iron	> 0.3 mg/L	80%		*
Manganese	> 0.1 mg/L	< 1%		*
Nitrate	> 10 mg/L (Nitrogen)	< 1%	*	
Aluminium	> 0.2 mg/l	51%		*
Cadmium	> 5 µg/L	NIL	*	
Copper	> 1 mg/L	< 1%		*
Zinc	> 5 mg/L	NIL		*
Lead	> 50 µg/L	< 1%	*	
Trihalomethanes	> 30 µg/L (Chloroform)	64%	*	
Pesticides	> Various	NIL	*	

Reference

Department of Conservation and Environment (1992). Drinking Water Quality, Victoria 1984-1989. Water Resource Management Report Series No 77. (Department of Conservation and Environment: Melbourne.)

Appendix V

RECOMMENDATIONS FOR RIVER FRONTAGES, BEDS AND BANKS

The following recommendations arising from the Council's Rivers and Streams Special Investigation (June 1991) have been approved by the Government.

Recommendations

Public Land Water Frontage Reserves

RFBB1 That public land water frontages

- (i) be used to
 - (a) conserve native flora and fauna as part of an integrated system of habitat networks across the State
 - (b) maintain or restore indigenous vegetation
 - (c) protect adjoining land from erosion, and provide for flood passage
 - (d) protect the character and scenic quality of the local landscape
 - (e) provide protection for cultural heritage features and associations
 - (f) provide access for recreational activities and levels of use consistent with (a) to (e) above (see Note 1)
 - (g) where this does not conflict with (a) to (f) above, allow access for water, and for grazing of stock by adjoining landholders under licence

that

- (ii) where frontage reserves are currently licensed for grazing or other purposes, and where stream-bank or frontage vegetation is degraded, frontage vegetation is not regenerating, or stream banks are eroding, consultative groups be established by the public land managers, with waterway management, local government, and licensee representatives, as follows:
 - (a) at a State level, to develop guidelines and programs for restoration of frontages, including re-establishing or regenerating indigenous vegetation
 - (b) at a regional level, to develop strategies for managing frontage reserves while vegetation is being restored
 - (c) at a local level, to set priorities and a time-table for frontage restoration and maintenance

and these guidelines, programs and strategies be implemented according to the priorities and time-table so determined (see Notes 2 to 6)

that

- (iii) (a) where habitat and landscape are proposed to be restored, particularly in cleared or degraded areas, indigenous trees, shrubs, and ground species be planted
- (b) if appropriate, suitable areas for more intensive recreational use be identified and facilities established

(continued)

Appendix V (continued)

- (c) where land exchanges are proposed that involve frontage land that is no longer adjacent to rivers, efforts be made to prevent loss of any nature conservation or other values of this land from the public land estate (see Note 5)
- (d) a method be developed that will allow public land frontages to be readily identified, and such frontages be so marked where appropriate
- (iv) (a) where a licence has been issued for a public land water frontage as in (i) (g) above, recreation use by the public for activities such as walking, nature observation, or fishing be permitted while motorised forms of recreation not be permitted
- (b) licensees be required to provide stiles in any fences erected across their licence area if requested to do so by the land manager (see Notes 7 and 8)
- (c) no new cultivation for agriculture be permitted, and areas currently cultivated be reviewed by the land manager as part of a systematic assessment of river restoration priorities, with a view to phasing out inappropriate cultivation
- (d) in particular cases, licensees be required to fence off and exclude stock temporarily from some parts of the licence area where, in the opinion of the land manager, special measures are necessary to protect water supplies, to rehabilitate areas that are eroding or salt-affected, to permit regeneration of native plants that have particular value for nature conservation, or to protect cultural, recreational, and scenic values that are sensitive to the impacts of grazing (see Note 8)
- (v) the Department of Conservation and Natural Resources be consulted prior to the proclamation of roads, the construction of roadways, or the creation of buildings on public land water frontages

and that public land water frontages be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation and Natural Resources (or present manager), in consultation with the relevant waterway authority (see Note 9).

Stream Beds and Banks

RFBB2 That stream beds and banks, subject to other relevant recommendations, guidelines and statutory requirements

- (i) be used to
 - (a) conserve or restore habitat for native flora and fauna
 - (b) provide for appropriate recreational activities and levels of use
 - (c) provide for flood passage and drainage requirements of adjacent land
 - (d) where necessary, provide for the passage of artificial flows of water stored within the catchment or transferred from other catchments
- (ii) be maintained in a stable condition using environmentally sound techniques
- (iii) where this does not conflict with (i) and (ii) above, provide a source of sand and gravel

and that stream beds and banks be securely reserved and managed by the relevant waterway authority or the Rural Water Corporation (or present manager), in consultation with the Department of Conservation and Natural Resources.

(continued)

RFBB3 That

- (i) the interrelated nature of the values and uses of river frontage, beds and banks be recognised in management planning and implementation
- (ii) initiatives be developed and implemented to remove economic, social, administrative and technical factors that lead to losses of river bed, bank, and frontage values, or to difficulties in achieving effective and co-ordinated restoration and maintenance programs
- (iii) programs for stream bed, bank and frontage stability be carried out in accordance with the Council's guidelines for waterway management (see LCC, 1991).

Notes:

1. Recommendation F1(h) (see LCC, 1991) provides that a code of behaviour for recreational users of river frontages be developed and promoted.
2. Council recognises that a number of bodies currently exist which undertake, or are capable of undertaking the functional requirements at State, regional or local levels. In this context 'regional' would cover a single river basin or a number of adjacent basins, and 'local' an area within a river basin, such as individual drainage catchments or a particular river reach.
3. It is envisaged that for community consultation, Catchment Co-ordination Groups where they exist, or similar groups where they do not, could carry out or facilitate stages SFBB1 (ii)(b) and (ii)(c) above, and that the Standing Committee on Rivers and Catchments or equivalent organisation could carry out or facilitate SFBB1(ii)(a). When determining priorities, restoration or maintenance programs which lead to direct site improvement are to be given precedence.
4. Vegetation re-establishment or regeneration may require the temporary or permanent removal of stock from some frontage areas.
5. These areas could include values such as remnant vegetation, wetland habitat, opportunities for recreational use or contain features of cultural significance, such as scarred trees.
6. Identification of priorities in SFBB1(ii)(c) should take into account the guidelines set out above.
7. The choice of a suitable design for stiles should involve representatives of the frontage user groups such as the Victorian Farmers' Federation and peak recreation groups.
8. These are provisions in existing legislation, regulations, or licences.
9. It is Council's intention that these areas remain within the public land estate and be securely reserved. The *Crown Land (Reserves) Act 1978* requires that areas to be reserved be surveyed, a process which is expensive and protracted. If alternative methods become available which will achieve Council's intention of secure reservation, for example using a record plan, then these could be used, provided that the reservation is otherwise comparable to permanent reservation under the *Crown Land (Reserves) Act 1978*.

Appendix VI

RECOMMENDATIONS FOR HERITAGE RIVERS

The following recommendations arising from the Council's Rivers and Streams Special Investigation (June 1991) have been approved by the Government. They have been amended to reflect the provisions of the *Heritage Rivers Act 1992*.

VICTORIAN HERITAGE RIVERS

Recommendations

VHR3,4,5,13,14 That the river corridors described below be designated Victorian heritage rivers, and be used:

- (a) to protect natural, scenic, cultural heritage, and recreational values, with particular attention to the recommendations for specific river corridors listed below
 - (b) to provide opportunities for landscape appreciation and education, except where this conflicts with (a) above
 - (c) to provide for a range of recreation opportunities as permitted in accordance with land status, unless otherwise specified in these recommendations
 - (d) in accordance with the policy recommendations in Chapter F of the Rivers and Streams Special Investigation Final Recommendations 1991
- that
- (e) where indicated below, the river corridors be retained free from impoundments, artificial barriers, or structures that impede the passage of in-stream fauna, unless approved by the Governor in Council
 - (f)
 - (i) any new water diversions from the mainstream or tributaries upstream of the lowest point on each Victorian heritage river not significantly impair the existing values identified in the river descriptions below, unless approved by the Governor in Council
 - (ii) where detailed environmental and recreational flows have been established, they should be retained
 - (iii) where detailed investigations to establish the environmental water requirements of Victorian heritage rivers have not been undertaken, these investigations should be completed in any review of water allocations in existing regulated systems
 - (iv) Victorian heritage rivers be given priority in investigations undertaken to establish appropriate environmental water requirements in existing regulated systems
 - (g) existing water quality be maintained, or where degraded be progressively improved - where opportunities allow - in accordance with the protection of the values and uses specified
 - (h) timber-harvesting not be permitted in Victorian heritage river corridors, except where specified for particular rivers below
 - (i)
 - (i) where currently permitted, and at the discretion of the corridor managers, public land within the Victorian heritage river corridors continue to be available for grazing, except where this would prevent revegetation of the banks and frontage reserves, or cause bank erosion, degradation of water quality, or damage sites of cultural significance

(continued)

Victorian Heritage Rivers (continued)

- (ii) priorities for revegetation be developed in accordance with the process proposed for public land water frontage reserves (see Recommendations in Appendix V)
- (iii) grazing be strictly controlled or excluded either temporarily or permanently by the land managers from areas found to have important plant or animal communities that would be significantly impaired by continued grazing
- (j) (i) in carrying out road reconstruction and maintenance, relevant authorities take particular care with drainage, spoil disposal, and batter stabilisation, so that as far as possible sediment does not reach streams, causing siltation and turbidity
- (ii) in siting new roads and tracks, locations parallel and close to stream-courses be avoided and crossings minimised
- (k) (i) where currently permitted, use of public land along streams for bee-keeping continue
- (ii) where investigations show that the presence of commercial honey-bees is causing land management problems or adversely affecting river values at specific sites, hives be relocated temporarily or permanently
- (l) exploration and mining be permitted in Victorian heritage river corridors, except where land status excludes these activities, and subject to:
 - (i) existing Council policy that areas of particular value and sensitive to disturbance be identified and excluded from mining and from forms of exploration inappropriate to the protection of values
 - (ii) conditions ensuring that operations, discharges, treatment, and tailings have no adverse impact on the identified values or water quality

and that they be protected under the *Heritage Rivers Act* 1992, and managed as specified for each river.

Notes:

1. The corridors have been mapped based on the present stream location. Should the river course change markedly, the following applies:
 - * the new course becomes part of the corridor, on the basis of streamflow continuity. Where this course bisects freehold allotments, the bed and banks are not Crown land (that is, in most cases, public land). Where the course forms the boundary of a freehold allotment, the bed and banks are public land. In all cases, the use, flow, and control of all water is the right of the Crown.
 - * the old course retains its existing tenure, and all values present require protection.
2. The Gippsland Water Strategy has been developed by the Department of Conservation and Natural Resources. Its aims are to protect high value areas, promote sustainable catchment and waterway management, and provide a balanced allocation of water to off-stream users and the environment. The Thomson River, and other rivers in Gippsland, are included in the Strategy.

VH3 Howqua River

That the 60 km river corridor from the junction of the North and South Branches to Lake Eildon be used in accordance with general recommendations VHR3,4,5,13,14 (a) to (l) above

that

- (m) (i) the corridor be retained free from impoundments, artificial barriers, or structures that impede the passage of in-stream fauna, unless approved by the Governor in Council

(continued)

VH3 - Howqua River (continued)

- (ii) any new diversions of water only be permitted if their volumes, timing, and offtake do not significantly impair fish habitat conditions or canoeing quality, or reduce scenic landscape value, unless approved by the Governor in Council
- (iii) timber-harvesting continue, where land status permits, subject to the Code of Forest Practices and local prescriptions providing for a buffer around recreation routes and destinations

that

- (n) the following significant values be protected

- (i) canoeing - Eight Mile Creek to Frys Hut, and the Sheepyard Flat slalom site
- (ii) fishing opportunities - especially for trout
- (iii) cultural heritage sites - Frys Bridge, and early settlement and mining features
- (iv) Devonian fish fossil beds
- (v) habitat for the spotted tree frog

- (o) other recreation activities continue where permitted in accordance with land status

and that the corridor be managed by the Department of Conservation and Natural Resources, in conjunction with the Rural Water Corporation in relation to waterway management.

VHR4 Big River

That the 51 km river corridor from the junction of Spring and Oaks Creeks to Lake Eildon be used in accordance with general recommendations VHR3,4,5,13,14 (a) to (l) above

that

- (m)
 - (i) any new diversion of water only be permitted if its volume and timing, and the design of the offtake structure, do not significantly impair in-stream habitat conditions, the passage of in-stream fauna, or reduce scenic landscape value
 - (ii) the volume and timing of any new diversion be such as to not significantly impair canoeing quality, but that if such impairment is likely, an economic assessment of the relative social benefits and costs be carried out
 - (iii) timber-harvesting not be permitted in the corridor, but be permitted in the remainder of the valley, subject to application of the visual management system to minimise impacts on the scenic landscape viewed from the river and strategic vantage points
 - (iv) the Big River four-wheel-drive track not be upgraded, in order to limit use and maintain the current range of recreational opportunities
 - (v) if possible, the shallow quarries along the Jamieson Road be relocated and the sites reclaimed

that

- (n) the following significant values be protected

- (i) habitat for the spotted tree frog
- (ii) scenic landscapes along the Big River from Oaks Creek to Lake Eildon

(continued)

VHR4 - Big River (continued)

- (iii) fishing opportunities - especially for trout
- (iv) the canoe resource in a semi-remote setting from Frenchman Creek to Jamieson Road Bridge
- (o) other recreation activities continue where permitted in accordance with land status

and that the corridor be managed by the Department of Conservation and Natural Resources, in conjunction with the Rural Water Corporation in relation to waterway management.

Notes:

1. In any review of these recommendations, the need to divert water from within the corridor to augment Melbourne's water supply should be considered.
2. The Goulburn system of which the Big River is a tributary is at present fully committed. Council is concerned that the diversion of water from the Big River may limit options for the future provision of an environmental water requirement for the Goulburn.
3. As part of the State Water Resources Plan, preliminary studies of potential diversion sites on the upper reaches of the Big, Black, and Upper Goulburn Rivers have been initiated by the Department of Conservation and Natural Resources. They cover archaeology, mining heritage, fauna, landscape assessment, and fish-flow requirements.

VHR5 Goulburn River

That the 430 km river corridor from below Lake Eildon to the Murray River be used in accordance with general recommendations VHR3,4,5,13,14 (a) to (l) above

that

- (m) (i) the corridor be retained free from further impoundments, artificial barriers, or structures that impede the passage of in-stream fauna, unless approved by the Governor in Council (see Note 1)
- (ii) any new diversions of water only be permitted if their volumes, timing, and offtake do not significantly impair wetland, riverine forest, or native fish habitat conditions, or reduce scenic landscape value, unless approved by the Governor in Council (see Note 2)
- (iii) timber-harvesting be permitted in the lower Goulburn forests below Murchison, subject to the Council's principles and guidelines for river red gum harvesting operations
- (iv) grazing continue where it is currently permitted, subject to the discretion of the land manager, but that in areas where surveys identify a risk of degradation through loss of biological values or bank instability, licences be reviewed (see Notes 3 and 4)
- (v) the impact of firewood harvesting on flora and fauna values be assessed, and subject to the assessment be permitted at the discretion of the manager

that

- (n) the following significant values be protected
 - (i) areas with an intact understorey in river red gum open forest/woodland, and yellow box and grey box woodland/open forest communities (see Note 5)

(continued)

VHR5 - Goulburn River (continued)

- (ii) areas of habitat significance for vulnerable or threatened wildlife including squirrel gliders, large-footed myotis, barking march frogs, barking owls, and brush-tailed phascogales
- (iii) native fish diversity and Murray cod habitat below Goulburn Weir by providing water conditions conducive to seasonal spawning (see Note 6)
- (iv) Macquarie perch habitat above Goulburn Weir
- (v) *fishing opportunities - especially for trout from Eildon to Yea River, and native species below Goulburn Weir*
- (vi) canoeing - Eildon to Goulburn Weir
- (vii) cultural heritage sites listed above
- (viii) scenic landscapes - from Molesworth to above Seymour, and from below Seymour to Echuca
- (o) other recreation activities continue where permitted in accordance with land status

and that the corridor be managed by the Department of Conservation and Natural Resources in conjunction with the Rural Water Corporation, the Mid-Goulburn River Management Board and other relevant waterway authorities in relation to waterway management.

Notes:

1. The Goulburn River has required bed and bank stabilisation measures in the past, and Council is aware of the existence of various works and of continuing needs.
2. The flow regimes of the Goulburn River are modified, and the present system is fully committed. Council is concerned that re-allocation of water within and from the Goulburn River basin for off-stream use could preclude the provision of an environmental water requirement for the Goulburn.
3. *Some limited areas of the public land water frontage are cultivated or used for horticulture. While these are considered inappropriate uses of frontages, they may be continued at the discretion of the corridor managers, but should be subject to review.*
4. In accordance with recommendations VHR3,4,5,13,14(f)(iii) and (iv), a review of water allocations in the Goulburn system should include consideration of the environmental water requirements of Murray cod and the diverse community of other native fish, the riverine forests and adjoining wetlands, and the ability of the Rural Water Corporation to provide appropriate water conditions.
5. Submissions identified bank instability as a problem associated with rapid river falls at the completion of a flow release.
6. Council is aware of a proposal to construct a hydro-electric scheme at the Eildon Pondage Weir. These recommendations would not prevent this.

VHR13 Thomson River

That the 64 km river corridor from below the Thomson Dam to Cowwarr be used in accordance with general recommendations VHR3,4,5,13,14 (a) to (l) above

that

- (m) (i) *the corridor be retained free from further impoundments, artificial barriers, or structures that impede the passage of in-stream fauna, unless approved by the Governor in Council*

(continued)

VHR13 - Thomson River (continued)

- (ii) no new diversions of water from the Thomson River corridor be permitted, unless approved by the Governor in Council
- (iii) any new diversions from tributary streams entering the corridor upstream from Cowwarr Weir only be permitted if their volumes, timing, and offtake do not significantly impair canoeing quality or native fish habitat, or reduce scenic landscape value
- (iv) the committee established to review releases from the Thomson Dam assess the level of adequate environmental water requirement, and ensure this is provided
- (v) the canoeing quality of downstream releases be optimised within allocation agreements (consistent with the protection of in-stream biological values)
- (vi) timber-harvesting in the Thomson Valley outside the corridor be subject to application of the visual management system, to minimise impacts on the scenic views from the river and strategic vantage points

that

- (n) the following significant values be protected
 - (i) canoeing - Thomson Dam to Cowwarr Weir
 - (ii) scenic landscapes along the Thomson River for the whole reach
 - (iii) cultural heritage sites
 - (iv) fishing opportunities, especially for freshwater blackfish
 - (v) Australian grayling habitat, by not creating barriers to migration below the designated corridor, and by maintaining water quality, flow, and in-stream habitat conditions
- (o) the relatively natural mainstream condition be protected
- (p) other recreation activities continue where permitted in accordance with land status

and that the corridor be managed by the Department of Conservation and Natural Resources, in conjunction with the Rural Water Corporation and Melbourne Water (in relation to river flows) and the Latrobe Region Water Authority (in relation to waterway management).

Note:

The committee established to review releases from the Thomson Dam is convened by the Division of Water Resources.

VHR14 Yarra River

That the 103 km river corridor from Warburton to Warrandyte be used in accordance with general recommendations VHR3,4,5,13,14 (a) to (l) above

that

- (m) (i) any new impoundments, artificial barriers, or structures that impede the passage of in-stream fauna, or diversions of water from the river, only be permitted if their volumes, timing, and offtake do not significantly impair fish habitat conditions, canoeing quality, or scenic landscape value

(continued)

VHR14 -Yarra River (continued)

- that
(n) (ii) programs to revegetate and restore frontages be continued, or developed according to priorities that take account of the identified values
- (n) the following significant values be protected
- (i) scenic landscapes from Yarra Glen to Warrandyte
 - (ii) botanical values
 - (iii) zoological values
 - (iv) canoeing - Warburton to Warrandyte
 - (v) river blackfish and Macquarie perch habitat
 - (vi) fishing opportunities, especially for trout
 - (vii) geological/geomorphological sites of significance
- (o) other recreation activities continue where permitted in accordance with land status

and that the corridor be managed by the Department of Conservation and Natural Resources in conjunction with Melbourne Water.

Notes:

1. The Yarra River corridor lies within a broader valley area which in 1982 was given a 'classified' status by the National Trust, in recognition of its cultural, natural, recreation and scenic values.
2. A number of arrangements are currently in place which specify minimum flows in the Yarra. These are a 73 ML per day at Millgrove (set in 1974) and 245 ML per day at Warrandyte (set in 1984). These flows were set to meet specific requirements at those times, but at present the environmental water requirements have not been determined.
3. A project to investigate the effects of different flow levels on the environment and water quality has been jointly developed by the Environment Protection Authority, Melbourne Water and the Upper Yarra Valley and Dandenong Ranges Authority. The implementation of this project awaits adequate resources.

References

Land Conservation Council (1991). Rivers and Streams Special Investigation - Final Recommendations. (Land Conservation Council: Melbourne.)

Heritage Rivers Act 1992 (Act No 36/1992); Proclaimed 8 September 1992 except for S.20).

Appendix VII

GUIDELINES FOR PROTECTION OF THE ALPINE WALKING TRACK

Because of its national significance as a bushwalking route, the Alpine Walking Track (AWT) and its immediate environs should be managed in a way that affords the greatest protection to the natural environment.

Council considers that on and adjacent to the AWT a principal management aim should be to preserve the immediate foreground views as seen from the track. For this reason, it believes a visual corridor should be preserved along the track wherein changes to the natural systems are kept to a minimum. The width of this corridor will vary from place to place according to local circumstances such as topography and vegetation type. For instance, in steep terrain supporting dense forests, the visual corridor will be narrower than in relatively flat, open country. Council believes that, in general, the visual corridor would rarely exceed 50 m from either side of the track.

Within the visual corridor Council considers that:

- * logging should not be permitted
- * log or fuel dumps should not be permitted
- * new roads and earthworks should not be permitted where a viable alternative exists
- * erection of structures not used in conjunction with the track, such as sheds, transmission poles, ski-tows, and the like, should not be permitted (this provision is not meant to inhibit the maintenance of existing huts nor the construction of new huts or shelters for the use of walkers)

Furthermore, management authorities should consult relevant user groups, especially bushwalking organisations, on any proposals that could have an impact on the AWT and its immediate environs.

As well as protection of the immediate environs of the AWT, Council is also aware of the concern of bushwalkers for the maintenance of the magnificent vistas as seen from many parts of the track. It is this scenic quality that adds greatly to the experience of walking the AWT.

Council believes it is impracticable to prohibit all activities that alter the natural landscape within the extensive areas that can be seen from the AWT. Management techniques can be employed to greatly minimise the visual impact of such activities, however. In particular, the Department of Conservation and Resources has established a Visual Management System, which can assist in reducing the visual impact of timber-harvesting and other operations. The broad-scale planning level of the Visual Management System has been applied to all State forests adjacent to the AWT. Council believes that this system should be integrated into the forest management operations in these areas.

(The above is an extract from the Council's final recommendations for the Alpine Area Special Investigation, 1983).

Appendix VIII

COMMUNITY USE AREAS

Recreation Areas (Recommendation J15)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
T ABERFELDY	SOUTH-EAST OF CA 6 SEC 1	0.41	P KOO-WEE-RUP	CA 47,49B SEC K	11.45
T ALEXANDRA	CA 14,15,16 SEC 65A	1.28	P KOO-WEE-RUP EAST	CA 34 SEC U	6.07
T ALEXANDRA	CA 6 SEC 39	4.60	T KORUMBURRA	CA 4A SEC 1	0.24
P ALEXANDRA	CA 26D	5.28	T KORUMBURRA	CA 17 SEC 4A	3.52
T ALEXANDRA	CA 5 SEC 39	0.16	T KORUMBURRA	PART CA 49,49A SEC 6	6.00
T ALEXANDRA	CA 9,10,11,12,13,17,18 SEC 65A	9.68	P LANG LANG	PART CA 90B (WEST OF ROAD)	8.70
T BALNARRING BEACH	CA 10A,10B & UNUSED ROAD	0.85	P LANG LANG	CA 78F,78L	16.66
T BALNARRING BEACH	CA 9A	2.10	P LANG LANG	CA 13C	0.15
T BASS	CA 14,15 SEC 7	15.27	P LANG LANG	CA 90A	57.34
P BITTERN	CA 17E	4.05	P LANG LANG	PART CA 78L	3.75
P BITTERN	CA 34C	4.59	P LANG LANG	CA 78H	0.53
P BITTERN	CA 100B,101A	62.88	P LANG LANG EAST	CA 118G,118H	6.98
P BITTERN	CA 110C	4.05	P LANGWARRIN	CA 1A SEC B	17.31
P BITTERN	CA 22A	104.63	T LILYDALE	CA 3 SEC 13	0.60
T BONNIE DOON	CA 3,3A-E,4,4A-C SEC 9	3.37	T LILYDALE	CA 11 SEC 12	0.36
P BUNYIP	CA 9A	8.96	T LONGWARRY	CA 12 SEC 4	0.33
T BUNYIP	CA 2 SEC 13	1.45	T LONGWARRY	CA 6,7,8,9,10,11 SEC 15	7.29
T BUNYIP	CA 1A SEC 1	0.88	P LONGWARRY	CA 99D	2.55
P BUNYIP	CA 12H	11.78	T LONGWARRY	CA 35 SEC 3	0.24
T BUNYIP	CA 16,17 SEC 14	8.75	T LONGWARRY	CA 1 SEC 6	1.50
T BUNYIP	CA 3 SEC 13; CA 1-8 SEC 14	1.22	T MAINDAMPLE	CA 16 SEC 30; CA 13 SEC 32	3.30
T COALVILLE	CA 4 SEC 1A	0.94	T MANSFIELD	CA 14 SEC 29	2.63
T CORA LYNN	CA 19D,19E,19F,19G SEC 1	0.89	T MARYSVILLE	CA 9 SEC E	0.24
T CORA LYNN	CA 19A,19B,19C SEC 1	12.76	T MARYSVILLE	CA 5 10 SEC E	1.34
T CORINELLA	CA 14C,14D	0.20	P MOE	CA 131G,131H,131F	4.00
P CORINELLA	CA 212C,212D,212E	24.06	T MOLESWORTH	ADJ CA 5 SEC B	4.02
T COWES	CA 7,8,9,10,17,18,19,20 SEC 9	0.80	P MONBULK	CA 11 SEC O	34.29
T CRANBOURNE	CA 21C NO SEC	0.81	T MONBULK	CA 12,15(PART) SEC 3	3.55
T CRANBOURNE	CA 21F,21G NO SEC	28.07	P MOONDARRA	CA 4H,4I,4K,4L,4L1 SEC B	9.74
T CRANBOURNE	CA 21H NO SEC	44.72	P MOOROODUC	CA 58A	1.25
T CRANBOURNE	CA 21E NO SEC	0.62	P MOOROODUC	CA B1	56.81
P CRANBOURNE	CA 17A	94.59	P MOOROODUC	CA 76D	1.53
T CRIB POINT	CA 18 SEC 3	4.38	T MORNINGTON	CA 8A,B,C,D SEC 1	19.74
T DROMANA	CA 1 SEC 2A	1.38	T NARBETHONG	CA 5 SEC 20	3.95
P DROUN WEST	CA 53A,53B,53C	43.40	P NARRACAN	PT CA 4S NO SEC	39.06
T ELTHAM	ADJ CA 3 & 6 SEC 9	23.50	P NARREE WORRAN	PART CA 4 SEC C	2.81
T EMERALD	CA 11A SEC A	0.60	P NARREE WORRAN	CA 49A NO SEC	5.89
T FLINDERS	CA 1A,1B,1C SEC 3	0.87	T NEERIM	CA 14C,4D,14F	4.08
T FLINDERS	CA 6B,6C	5.90	P NEERIM	CA 81A	3.90
T FLINDERS	CA 21,21A	25.97	P NEERIM EAST	CA 22A SEC E	3.85
P FLOWERDALE	CA 17E	4.52	P NEPEAN	CA 96G,96H,96F	0.87
P FUMINA	CA 95A	1.00	T NEWHAVEN	CA 43 NO SEC	5.25
P GEMBROOK	CA 9A SEC D	7.39	T NOOJEE	CA 8,9 SEC 7	4.29
P GEMBROOK	CA 19B NO SEC	3.01	T NOOJEE	CA 22A SEC 1	0.19
P GEMBROOK	CA 1B SEC D	0.28	T NYORA	CA 15 SEC 2	4.40
P GEMBROOK	CA 19C NO SEC	0.17	T OLINDA	CA 26,27 NO SEC	2.26
P GOBUR	CA 6	22.33	T OSBOURNE	CA 19A SEC B	0.97
P GOULBURN	CA 14 of 5	2.17	T OSBOURNE	CA 21 SEC 2	0.81
T GRANTVILLE	CA 9 SEC B	9.10	P PAKENHAM	CA 53A	4.52
P GREENSBOROUGH	CA 24B SEC C	1.85	T PANTON HILL	CA 16A,16B 16C	1.43
T HASTINGS	CA 7,7A,8,8A SEC 21	14.32	P POOWONG	CA 7A,7B,7C,7D	4.77
T HASTINGS	CA 1,1A SEC 19	2.03	T POOWONG	CA 7A SEC 3	0.04
T HASTINGS	CA 22 SEC D	0.38	T POWELLTOWN	CA 5 SEC A	3.98
T HASTINGS	CA 18 SEC D	3.16	T QUEENSTOWN	CA 1 SEC 4A	1.18
T HASTINGS	CA 6 SEC A	3.54	P QUEENSTOWN	PART CA 40B,40C SEC C	12.72
T HEALESVILLE	CA 10 SEC A	0.13	T SAN REMO	CA 25A	0.32
T HEALESVILLE	CA 1A,1B SEC Q	1.07	T SEVILLE	CA 31B	3.54
T HEALESVILLE	CA 3,6,7 SEC 7	8.80	T SORRENTO	CA 16A	2.35
T JAMIESON	CA 1,4 SEC 12	0.19	T STRATH CREEK	CA 6 SEC D	0.37
T JAMIESON	CA 5,6 SEC 29	3.13	P TALLAROOK	CA 14B,16A SEC 1	75.00
T JAMIESON	CA 2 SEC 12	0.01	T TALLAROOK	NORTH PART CA 7B SEC 10	8.30
P KANGERONG	CA 28H	25.34	P TANJIL	CA 50A	2.66
P KEELBUNDORA	CA 28F	0.25	P TANJIL	CA 20C	2.80
P KEELBUNDORA	CA 16 G	2.51	P TANJIL EAST	WEST OF CA 13D SEC C	4.73
P KEVINGTON	CA 1 of 4	6.27	P TARRAWARRA	CA 26 SEC B	15.62
P KINGLAKE	CA 14C, 14E	3.51			
T KINGLAKE EAST	PART CA 6A	2.04			

(continued)

Appendix VIII - Recreation Areas (J15) (continued)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
P TARRAWARRA	CA 23B,23C SEC B	54.53	T WONTHAGGI	CA 5 SEC 86	1.91
T TOOLANGI	CA 18B	3.13	T WONTHAGGI	CA 11 SEC 51	2.38
T TOOLANGI	CA 38B	0.70	T WONTHAGGI	CA 1A SEC 55	0.10
T TRAFALGAR	CA 6B,6C SEC 10	1.12	T WONTHAGGI	CA 2 SEC 4	0.46
P TYABB	CA 4,5,6 SEC A	13.75	T WONTHAGGI	CA 3 SEC 117	61.43
T VENTNOR	SEC 12	3.04	T WONTHAGGI	PART CA 5,5A SEC 3C	9.78
T VENTNOR	CA 14 SEC 8	0.30	P WOOLAMAI	CA 106G	24.83
P WANNAEUE	CA 11A	2.00	P WOORI YALLOCK	CA 1B	2.24
P WANNAEUE	PART CA 31B,31G,32E	65.64	P WOORI YALLOCK	CA 67C	2.36
P WARBURTON	CA 6B SEC B	1.25	P YALLOCK	CA 171	8.84
T WARNEET	CA 57 SEC J	5.45	P YALLOCK	CA 10N,10Q NO SEC	13.90
T WARNEET	CA 56 SEC J	3.68	P YANNATHAN	CA 101B	2.40
P WARRANDYTE	ADJ CA 11A	0.25	P YANNATHAN	CA 44B	5.10
P WARRANDYTE	ADJ CA 11A	2.00	T YARCK	CA 16 SEC B	1.85
T WESTBURY	CA 2D SEC 3	0.47	T YARRAGON	CA 12A,13 SEC 11	4.52
T WILLOW GROVE	CA 9A SEC A	2.83	P YARRAGON	CA 29A SEC B	0.40
T WONTHAGGI	CA 39 SEC 117	0.09	P YARRAGON	CA 15C,15D, NO SEC	4.00
P WONTHAGGI	CA 47B (NORTH SECTION)	35.81	P YEA	CA 18A SEC 1	54.45
P WONTHAGGI	CA 26D	13.54	T YEA	CA 1 SEC 7	3.04
T WONTHAGGI	CA 3 SEC 102	4.55	T YEA	PART CA 3 SEC 12	0.61
T WONTHAGGI	CA 3A SEC 102	0.05	T YEA	CA 3B,3C,3D,3E,3F SEC 12	1.65
T WONTHAGGI	CA 4 SEC 102	8.11	P YERING	CA B4 SEC 4	18.60
T WONTHAGGI	CA 5 SEC 102	2.80			

**Buildings in Public Use
(Recommendation J24)**

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
T ALEXANDRA	CA 5B SEC 65A	0.07	T EMERALD	CA 4A,4R SEC A	1.44
T ALEXANDRA	CA 3 SEC 6	0.19	T EMERALD	CA 5B SEC A	0.20
P ALEXANDRA	CA 107E	0.11	P FRENCH ISLAND	CA 9A SEC M	1.62
T ALEXANDRA	CA 3 SEC 54	0.38	P FRENCH ISLAND	CA 5B,5C NO SEC	3.24
T BASS	CA 1,2 SEC 1	0.72	P GEMBROOK	CA 1A SEC D	0.45
T BASS	CA 5,6 SEC 6A	1.14	P GEMBROOK	CA 9D SEC D	0.17
P BEENAK	CA 79A1,79A2	0.23	P GRACEDALE	CA 117D	2.00
T BEVERIDGE	CA 16A NO SEC	2.02	P GRACEDALE	CA 112A	0.40
P BITTERN	CA 111C	2.76	T GRANTVILLE	CA 11 SEC C	0.20
P BITTERN	CA 17G,17F	2.76	T HASTINGS	CA 6A,6B SEC 21	1.01
P BURGOYNE	CA 41H	0.10	T HEALESVILLE	CA 15 SEC D	2.05
P BURGOYNE	CA 52A	0.50	T HEALESVILLE	CA 4 SEC 7	0.27
P BUXTON	CA 7B,7C	1.51	P JINDIVICK	CA 59F	0.37
P CORINELLA	CA 212G,212H	3.07	P JINDIVICK	CA 6A	0.30
T CORINELLA	CA 2 SEC 19	0.20	P JINDIVICK	CA 59G	2.60
T CRANBOURNE	CA 11,12 SEC 2	1.01	P KANGERONG	CA 28E,28G	14.43
P CRANBOURNE	CA 71E	1.62	T KILCUNDA	CA 35A SEC 2	2.09
T CRANBOURNE	PART CA 4 SEC 4	0.42	P KINGLAKE	CA 75N	0.75
T CRANBOURNE	CA 11B NO SEC	0.40	T KINGLAKE CENTRA	CA 10	0.80
T CRIB POINT	CA 22,23,24,25,30 SEC 4	2.20	T KINGLAKE EAST	CA 34	3.56
T CRIB POINT	SEC 2	9.55	P KOOBYBOYN	CA 7D SEC C	0.75
T CROSSOVER	CA 9A	0.81	P KONGWAK	CA 25Q	1.50
P DARNUM	CA 89D	0.40	P KOO-WEE-RUP	CA 15C	14.30
T DIAMOND CREEK	CA 1 & ADJ CA SEC 1	0.66	P KOO-WEE-RUP	CA 1K SEC H	0.20
T DROMANA	CA 1 SEC 13	0.08	P KOO-WEE-RUP EAST	CA 32A SEC V	1.02
T DROMANA	CA 2 SEC 1A	0.14	P KOO-WEE-RUP EAST	CA 69B SEC B	4.05
T DROMANA	CA 1 SEC 17	0.40	P KOO-WEE-RUP EAST	CA 9A SEC C	0.81
T DROUIN	CA 13B,13C SEC 7	1.13	T KORUMBURRA	CA 16D,16E SEC 4	0.90
P DROUIN WEST	CA 4A	2.02	T LILYDALE	ADJ CA 2B SEC 8	0.06
P DROUIN WEST	CA 101D	0.14	T LILYDALE	CA 9 SEC 10;	1.12
P DROUIN WEST	CA 156A	0.21		CA 5-11,14 SEC 3	
P DROUIN WEST	CA 101E	0.14	T LONGWARRY	CA 11 SEC 4	0.37
T EMERALD	UNUSED RD ADJ	0.48	P LONGWARRY	CA 99E	2.60
	CA 5C SEC A		P LONGWARRY	CA 99F	0.20
T EMERALD	CA 11B SEC A	0.20			

(continued)

Appendix VIII - Buildings in public use (J24) (continued)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
P LONGWARRY	CA 88A	3.16	T STRATH CREEK	CA 1,1A SEC C	0.37
T LONGWARRY	CA 12A-C 15-17 OF 4/1,2,16	1.62	P SUTTON	CA 75B	1.25
T MANSFIELD	CA 17 SEC 30	0.83	T TAGGERTY	CA 2 SEC 15	0.10
T MARYSVILLE	CA 11 SEC E	0.86	T TAGGERTY	CA 3,5 SEC 15	1.75
T MERTON	CA 6C,6D SEC 3	2.76	T TALLAROOK	CA 3,4,5,6 SEC 2	0.90
T MERTON	CA 7 SEC 4	0.31	P TANJIL	CA 20D	0.80
P MOE	CA 82F	1.00	P TANJIL EAST	CA 13E SEC C	0.13
T MOLESWORTH	ADJ CA 3 SEC C	1.47	P TONIMBUK EAST	CA 6 SEC C	0.25
T MONBULK	CA 13,14,15(PART) SEC 3	0.66	T TOOLANGI	CA 2A	0.81
T MONBULK	CA 16 SEC 3	0.81	T WALHALLA	CA 28	0.10
P MONBULK	CA 1C SEC H	1.38	P WALLAN WALLAN	CA 1B SEC A	2.01
P MOOROOLBARK	CA 33C	2.51	P WANDIN YALLOCK	CA 44A2	1.15
P MOOROOLBARK	CA 35D	1.25	P WANDIN YALLOCK	CA 122B	2.51
P NAYOOK	CA 58B	2.61	P WANDIN YALLOCK	CA 122A	0.08
P NEERIM	CA 164M	0.01	P WARBURTON	CA 7F	0.14
P NEERIM	CA 36G	0.40	P WARRANDYTE	ADJ CA 9C NO SEC	0.81
P NEERIM	CA 82D	0.10	P WARRANDYTE	CA 11D	0.31
T NEERIM	CA 14E	0.17	T WHISKEY CREEK	CA 31	0.20
P NEERIM	CA 9A	0.50	T WILLOW GROVE	CA 4 SEC A	0.20
T NEERIM	CA 12A & ADJ CA 12A	0.01	T WONTHAGGI	CA 37 SEC 117	1.61
P NEERIM	CA 21F	0.07	T WONTHAGGI	CA 35 SEC 117	7.71
P NEERIM EAST	CA 22B SEC E	0.20	T WONTHAGGI	CA 2 SEC 102	2.02
P NEERIM EAST	CA 20A SEC E	0.81	T WONTHAGGI	CA 42 SEC 1	0.10
T NEWHAVEN	CA 42 NO SEC	1.52	T WONTHAGGI	CA 3 SEC 4	0.47
T NEWHAVEN	ADJ CA 43A NO SEC	0.56	T WONTHAGGI	CA 4 SEC 4	0.12
T NEWHAVEN	CA 20 NO SEC	1.98	T WONTHAGGI	CA 5 SEC 4	2.43
T NOOJEE	PT CA 7 SEC 7	1.00	T WONTHAGGI	CA 1 SEC 7	1.26
	(EAST PART)		T WONTHAGGI	CA 2 SEC 7	0.57
T NYORA	CA 29A,29B,29C SEC 6	0.93	T WONTHAGGI	CA 20 SEC 9	0.48
T NYORA	CA 31A SEC 4	0.80	T WONTHAGGI	CA 1A SEC 9A	0.07
T OLINDA	CA 28,29(PART) SEC A	1.18	T WONTHAGGI	CA 38 SEC 117	6.14
T OLINDA	PART CA 30 SEC A	0.25	P WOODBOURNE	ADJ CA 6A SEC 1	0.81
T OLINDA	CA 29(PART) SEC A	1.21	T WOODS POINT	CA 2A SEC 9	0.06
P PAKENHAM	CA 40B1	0.20	T WOODS POINT	CA 16 SEC 21	0.12
P PAKENHAM	CA 34B	0.10	T WOODS POINT	CA 1A,1B,4 SEC 11	0.83
P POOWONG EAST	CA 17B	0.20	P WOORI YALLOCK	CA 14E	2.02
P POOWONG EAST	CA 28A	0.01	P WOORI YALLOCK	CA 67D	2.02
T POWELLTOWN	CA 9 SEC F	1.93	P YANNATHAN	CA 44E	0.80
T POWELLTOWN	CA 8A SEC D	0.15	P YARCK	CA 10D SEC A	0.25
T QUEENSTOWN	CA 1B SEC 4A	0.12	T YARCK	STATE SCHOOL	0.78
T QUEENSTOWN	CA 1A SEC 4A	0.16	T YARRA JUNCTION	CA 24A,24,25,26	1.60
T QUEENSTOWN	CA 12 & 13 SEC 2	0.69	T YARRAGON	CA 13 SEC 9	0.49
T RED HILL SOUTH	CA 1 SEC B	0.15	T YARRAGON	CA 10B SEC 10	0.22
T REEDY CREEK	CA 4,4A SEC 1	0.70	P YARRAGON	CA 1 NO SEC	1.00
T ROSEBUD	CA 15 SEC 1	0.13	P YARRAGON	CA 3A NO SEC	2.00
T RYE	CA 2 SEC 6	0.82	T YEA	CA 6 7 SEC 10	1.27
T RYE	ADJ CA 9 SEC 4	0.20	T YEA	PART CA 3 SEC 12	0.83
P SCORESBY	PART CA 72F	0.09	T YELLINGBO	CA 1	0.12
P SCORESBY	CA 10A SEC A	0.40	T YELLINGBO	CA 5	0.62
T SEVILLE	CA 87A,87B,87C	1.12	P YUONGA	CA 5G	1.86
T SEYMOUR	PART CA 12 SEC C	0.52	P YUONGA	CA 5E	0.16
T STRATH CREEK	CA 3,4 SEC C	0.75	P YUONGA	CA 5H	0.09

Appendix IX

SERVICES AND UTILITIES

Hospitals, Public Offices and Justice (Recommendation M15)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
T ALEXANDRA	CA 1 SEC 59	1.01	P NAR-NAR-GOON	CA 43D NO SEC	0.10
T ALEXANDRA	CA 5,6 SEC 52	1.40	P NARREE WORRAN	CA 40B SEC B	0.10
T ALEXANDRA	PART CA 5 SEC 47	0.63	P NEERIM	CA 84B	0.50
T ALEXANDRA	CA 11 SEC 36	0.64	T OLINDA	CA 20A NO SEC	0.12
T BUNYIP	CA 12,12A,12B SEC 8	1.96	T RED HILL SOUTH	CA 2,3 SEC B	0.36
T BUNYIP	CA 11 SEC 10	0.50	T SAN REMO	CA 12B SEC A	0.17
T BUNYIP	CA 3A SEC 2	0.11	T SAN REMO	CA 10B SEC A	0.54
P BURGOYNE	CA 13A SEC A	0.25	P SCORESBY	CA 63C1	1.42
T COWES	CA 12B SEC 8	0.14	T SEYMOUR	CA 1B SEC C	0.28
T COWES	CA 12A SEC 8	0.66	T SEYMOUR	CA 1A SEC C	0.16
T COWES	CA 13 SEC 6	0.09	T SEYMOUR	PART CA 12 SEC C	0.20
T COWES	CA 16,17 SEC 6	0.32	T SORRENTO	CA 10A SEC 2	0.09
T CRANBOURNE	CA 11,11C NO SEC	0.44	T SORRENTO	CA 9 SEC 2	0.18
T DIAMOND CREEK	CA 3,4 SEC 14	0.36	P WANDIN YALLOCK	CA 141D	0.17
T DROMANA	CA 3 SEC 19	0.11	P WANDIN YALLOCK	CA 81A	0.25
T DROMANA	CA 7A SEC D	0.10	P WANNAEUE	CA 13C	2.76
T DROUIN	FORMER POLICE STATION	0.26	T WARBURTON	CA 6B	0.11
P EILDON	CA 5E	0.20	T WONTHAGGI	CA 5 SEC 8	0.10
T FLINDERS	CA 1 SEC 6	0.20	T WONTHAGGI	CA 8A SEC 8	0.14
P GRACEDALE	CA 37D	2.02	P WONTHAGGI	CA 32D	0.09
P GRACEDALE	CA 4A SEC 2	3.67	T WONTHAGGI	CA 9A SEC 8	0.20
P GREENSBOROUGH	CA 84A SEC E	0.18	T WONTHAGGI	CA 44(PART) SEC 54A	2.08
T HASTINGS	CA 2A SEC 13	0.08	T WONTHAGGI	CL IN SEC 44	1.71
P JEETHO WEST	CA 30B	0.10	T WONTHAGGI	CA 2 SEC 10D	0.54
P KEELBUNDORA	PART CA 16C,16E	75.00	T WONTHAGGI	CA 4 SEC 10D	0.94
Note: The government recently announced the development of a new suburb in the Larundel - Gresswell Hospital Grounds (see Recommendation C39 also).			T WONTHAGGI	CA 1 SEC 10D	0.96
T LILYDALE	CA 12,13 SEC 3	0.28	T WONTHAGGI	CA 23,24 SEC 101	0.03
T MANSFIELD	CA 1G,1F,1B SEC 32	0.50	T WONTHAGGI	CA 34A SEC 54A	0.67
T MANSFIELD	CA 13 SEC 29	0.83	T WONTHAGGI	CA 3 SEC 10D	0.62
P MOONDARRA	CA 4Q,4R,4V,4W,4Y SEC B	0.75	T WONTHAGGI	CA 5 SEC 10D	4.19
T MORNINGTON	CA 7B PART 7A SEC 2	0.45	T WOODS POINT	CA 2A SEC 24	0.71
P NAR-NAR-GOON	CA 43A NO SEC	0.77	T WOODS POINT	ADJ CA 2 & 3 SEC 18	0.20
P NAR-NAR-GOON	CA 43B NO SEC	0.26	P YALLOCK	CA 3F NO SEC	2.02
			P YARRAGON	CA 11C	2.00
			T YEA	CA 12,12A SEC 8	0.23

Water and Sewerage Services (Recommendation M16)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
P BRANKEET	CA 9A	1.00	P NAR-NAR-GOON	UNUSED ROAD	1.00
T CORA LYNN	CA 2A SEC 1	0.27		ADJ CA 134A2	
P DARNUM	CA 57C	3.00	P NARREE WORRAN	PART CA 66A,71A	4.21
P EILDON	CA 2C	4.56	P NEERIM EAST	CA 3B SEC A1	1.00
P EUMEMMERRING	CA 70F,70G	8.78	T NEWHAVEN	CA 41 NO SEC	0.15
P KANGERONG	CA 28F	4.01	T OLINDA	PART CA 30 SEC A	0.05
P KOO-WEE-RUP	CA 13 SEC K1	5.76	P SCORESBY	PART CA 63,63A	12.00
P LANG LANG	CA 9B	2.00	P TARRAWARRA	CA 45P,45P1	25.60
T LONGWARRY	CA 3A,5A SEC 14;	1.00	P TARRAWARRA	PART CA 37B	0.00
	CA 7A SEC 13		P TRAAWOOL	ADJ CA 7F	1.25
P LOYOLA	CA 49A	4.16	T WARBURTON	CA 10B	0.02
T MARYSVILLE	CA 23 SEC 4	3.51	P WARBURTON	CA 206A	0.25
T MARYSVILLE	CA 13 NO SEC	24.00	T WONTHAGGI	CA 1 SEC 109	3.12
Note: This area is proposed for use as part of the Marysville sewerage scheme. An associated land exchange for a similar area is under consideration by the Department of Conservation and Natural Resources and the Mid-Goulburn Regional Water Board.			T WONTHAGGI	CA 2 SEC 26	2.91
P MOE	CA 10 SEC B2	0.83	P WONTHAGGI	CA 26C,26E,26M	16.91
			T YARRA JUNCTION	CA 42A	0.75
			T YARRA JUNCTION	CA 1A,14A	1.00
			P YEA	CA 43C	0.75
			P YEA	CA 202A	0.57
			T YEA	CA 1,2 SEC 38	2.73

Cemeteries
(Recommendation M19)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
T ABERFELDY	SOUTH OF CA 3 SEC 1	0.40	P NANGANA	CA 31B	1.76
P ALEXANDRA	CA 32M	2.26	P NAR-NAR-GOON	CA 135A	0.77
T ALEXANDRA	CA 4 SEC 29	0.79	P NARRACAN SOUT	CA 14J	2.00
P BEENAK	CA 83C	1.97	T NEERIM	CA 14G	1.21
P BITTERN	CA 129E	4.43	P NEERIM EAST	CA 36C SEC C	0.50
T BONNIE DOON	CA 13 SEC 9	1.26	P NEPEAN	CA 90A	3.27
P BROADFORD	CA 145W	1.20	P NILLUMBIK	CA 3C SEC 2	2.23
P BURGOYNE	CA 8G	2.01	T NYORA	CA 9 SEC 7	3.35
P CORINELLA	CA 175A,175B,175C	4.61	T OSBOURNE	CA 3A SEC A	8.04
T CRANBOURNE	CA 19B NO SEC	4.05	T PAKENHAM	CA 1A	2.02
T DIAMOND CREEK	CA 2 SEC 6	0.81	T POOWONG	ADJ CA 25 SEC 3	2.02
T DROMANA	CA 12,13 SEC D	3.78	P QUEENSTOWN	CA 1A,1B SEC B	2.05
T DROUIN	CA 8A SEC A	4.05	T RYE	CA 3 SEC 6	1.62
P DROUIN WEST	CA 50C	50.60	T SAN REMO	CA 26 SEC A	4.05
T ELTHAM	ADJ CA 1,2,2A SEC 13	6.00	P TALLAROOK	CA 53A	4.01
T FLINDERS	CA 5	2.89	T TALLAROOK	CA 47E SEC C	4.10
P FRENCH ISLAND	CA 4A SEC M	2.02	P TANJIL	CA 15D	2.00
P GEMBROOK	CA 32A SEC B	0.73	P THORNTON	CA 6D,6E	1.88
P GOBUR	CA 10D SEC B1	2.01	P TYABB	CA 76D	2.26
T HEALESVILLE	CA 12 SEC 6	3.69	P Warburton	CA 49A SEC B	5.27
P JAMIESON	CA 11 of 14	2.02	P Warburton	CA 97B	1.21
T KORUMBURRA	CA 6A SEC 7A	6.91	T WESBURN	CA 236	2.02
P LANG LANG	CA 78E	6.07	T WONTHAGGI	CA 13A SEC 58	8.09
T LILYDALE	CA 2B SEC 8	1.02	T WOODS POINT	CA 1 SEC 25	8.02
P MANSFIELD	CA 24C,24D	3.01	P WOOLAMAI	CA 19A,19B	2.31
T MARYSVILLE	CA 21 SEC 4	3.08	P YANNATHAN	CA 44C,44D	1.73
T MATLOCK	ADJ SEC 17	2.02	P YARCK	CEMETERY RESERVE	2.01
T MERTON	CA 20 SEC 1	2.01	T YARRAGON	CA 1 SEC 2	4.72
P MOE	CA 1A SEC B	4.05	P YEA	CA 31C	6.07
P MOE	CA 164E	3.50	T YEA	CA 6C SEC A	5.55
P MOLESWORTH	CA 1E SEC 5	4.77			

Appendix X

UNCATEGORISED PUBLIC LAND (Recommendation N1)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
T ALEXANDRA	CA 8 SEC 47	0.20	T KINGLAKE EAST	CA 18	0.81
T ALEXANDRA	CA 5 SEC 12	0.10	P KONGWAK	CA 25J	0.99
T ALEXANDRA	CA 2A SEC 13	0.11	P KOO-WEE-RUP	CA 43A SEC J	0.25
P ALLAMBEE EAST	CA 59A,59B,59C	1.19	P KOO-WEE-RUP	CA 1A SEC I	3.07
Note: This block is used occasionally for school camping.			P KOO-WEE-RUP	CA 1H,1J SEC H	5.20
P ALLAMBEE EAST	CA 10E,10H	1.28	P KOO-WEE-RUP	CA 11A SEC T	0.16
P AVENEL	NORTH OF CA 11 SEC 18A	6.00	P KOO-WEE-RUP	CA 31A SEC J	0.81
P BALNARRING	CA 1A	8.32	P KOO-WEE-RUP	CA 33A SEC H	1.54
P BALNARRING	CA 88C	0.75	P KOO-WEE-RUP	CA 14A SEC T	0.10
T BASS	CA 9 SEC 6A	1.00	P KOO-WEE-RUP	CA 48A,48B SEC I	0.12
T BEVERIDGE	CA 62A NO SEC	0.80	P KOO-WEE-RUP EAST	CA 6A,15C SEC V	1.22
T BEVERIDGE	CA 61,62 NO SEC	8.98	P KOO-WEE-RUP EAST	CA 1A-1F 1G SEC V	4.79
P BILLIAN	CA 3B SEC B	1.00	P KOO-WEE-RUP EAST	CA 1G SEC V	3.58
P BITTERN	C.L IN CA 88	1.00	P KOO-WEE-RUP EAST	CA 40A SEC D	0.16
T BONNIE DOON	CA 4B SEC 8	0.15	T KORUMBURRA	CA 16C SEC B	0.98
P BROADFORD	CA 135D	0.50	T KORUMBURRA	CA 5 SEC G	0.78
P BURGOYNE	CA 34E	1.00	P KORUMBURRA	CA 10A	0.40
T CORA LYNN	CA 17A,17B,17C SEC F	1.88	P LANG LANG	CA 80C	44.03
T CORA LYNN	CA 14G SEC F	2.00	T LONGWARRY	CA 10 SEC 2	0.20
P CORINELLA	CA 167A	1.28	P MANGALORE	CA 16K	0.50
P CORINELLA	CA 155H	0.76	T MATLOCK	CA 1-7 SEC 17	0.71
P CORINELLA	CA 106B	1.79	T MATLOCK	CA 1-7 SEC 13	0.57
P CORINELLA	CA 83A	0.20	T MATLOCK	CA 1-10 SEC 9	0.40
T CORINELLA	CA 3A,3B,3C,4A,5A SEC A	0.96	T MATLOCK	CA 1-8 SEC 14	0.90
P CRANBOURNE	CA 61A	5.27	T MATLOCK	CA 1,2,3 SEC 1	0.09
P CRANBOURNE	ADJ CA 72B	0.19	T MATLOCK	CA 2,4,5,8,13 SEC 10	0.19
P CRANBOURNE	PART CA 27	65.63	T MERINGO	CA 4-9 SEC 1	1.10
T CRIB POINT	CA 5,6,7,7A,19,20 SEC 3	8.18	T MERINGO	CA 2-5 SEC 2	1.18
T CRIB POINT	CA 16 SEC 1	0.26	T MERINGO	CL WEST OF SEC 1,2,5 & CA 66B	10.00
T CRIB POINT	CA 1,3,4,7,8,11,12,15 SEC 1	2.17	T MERTON	CA 8 SEC 4	0.81
P DELATTE	CA 52A,52B	1.25	P MOE	CA 147C	1.00
P DERRIL	CA 11C	2.89	P MOE	CA 101D	4.00
T DIAMOND CREEK	CA 1 & 2 SEC 14	0.19	P MOE	CA 24A	0.10
P DOOLAM	CA 106B1,106B2	1.25	P MOE	CA 32A	1.79
T DROMANA	ADJ CA 5 SEC E	1.75	P MOONDARRA	CA 12E NO SEC	2.30
T DROUN	CA 20 SEC 12	0.25	P MOOROOLBARK	PARTS CA 919B, 920A,920B,D	20.00
P FLINDERS	ADJ CA 14 SEC B	3.25	Notes:		
P FUMINA	ADJ CA 20	2.82	1. This area may continue to be used for agriculture under lease in the medium term, with a long-term option for addition to the adjoining park kept open.		
P FUMINA	CA 62B	0.43	2. The forested part of the currently leased area is recommended for inclusion with the adjoining park. Several dams in this area can continue to provide water supplies for the horticultural operation.		
P GEMBROOK	CA A11C SEC B	0.10	P NAR-NAR-GOON	CA 95D NO SEC	2.30
P GEMBROOK	CA 76A SEC G	0.25	T NARBETHONG	CA 5 SEC 15	1.18
P GEMBROOK	CA A10A SEC B	0.23	P NARRACAN SOUTH	CA 13A	1.00
P GEMBROOK	CA 73	6.07	P NARREE WORRAN	CA 48C	26.24
P GHIN GHIN	ADJ CA 59	1.00	Notes:		
P GHIN GHIN	CA 1A	7.28	1. This block - the former gun club at Lysterfield - adjoins municipal land. It would be preferable if future use of these areas were planned jointly.		
T GOBUR	CA 1 2 3 SEC 8	0.13	2. Remnant vegetation should be retained.		
T GOBUR	CA 4 5 SEC 13	0.25	P NARREE WORRAN	CA 37A,42A,42B SEC B	8.30
T GOBUR	CA 11 SEC 14	0.11	P NEERIM	CA 166A	0.51
T GOBUR	CA 1,2,3 SEC 1	0.22	P NEPEAN	CA 43A	1.00
T GOBUR	CA 1,2,3,4 SEC 10	0.32	P NEPEAN	CA 146A,146C	0.08
T GOBUR	CA 2,5,6 SEC 9	0.15	P NILLUMBIK	ADJ CA 14J SEC 3	0.40
P GOBUR	CA 16J	26.47	P NILLUMBIK	CA 5F SEC 18	0.12
P GRACEDALE	CA 34J SEC 2	0.10	P PAKENHAM	CA 14	0.81
T GRANTON	CA 1 SEC M	1.91	P PAKENHAM	CA 14A	1.00
T GRANTON	CA 7-9 11-19 SEC J	0.66	P POOWONG EAST	CA 29B	0.57
T GRANTON	CA 11-13 16-18 SEC H	0.61	P POOWONG EAST	CA 29D	0.51
P GREENSBOROUGH	CA 23B SEC C	3.84	P QUEENSTOWN	CA 57A SEC C	0.20
T JAMIESON	CA 6 SEC 19	0.28	T REEDY CREEK	CA 1A SEC 7	0.40
T JAMIESON	CA 8 SEC 28	0.21	T SAN REMO	CA 10E SEC A	0.68
T JAMIESON	CA 7,8,9 SEC 22	0.70	P SCORESBY	PART 40 ACRE Paddock	10.00
T JAMIESON	CA 6 SEC 12	0.35			
P JINDIVICK	CA 59E	3.30			
P JUMBUNNA	CA 51D	0.51			
P JUMBUNNA EAST	CA 41E NO SEC	1.21			
P KANGERONG	CA 27E	3.76			
T KILCUNDA	CA 3B	2.20			
T KILCUNDA	CA 17A SEC 2	0.20			
T KILCUNDA	CA 29 SEC 2	2.61			
P KINGLAKE	CA 73E	4.01			

(continued)

Appendix X (continued)

Parish (P) or Township (T)	Description	Area (ha)	Parish (P) or Township (T)	Description	Area (ha)
P SEYMOUR	CA 2 SEC W	5.68	P WONTHAGGI	CA 26J	3.50
T SMITHS GULLY	CA 46A	0.40	Note: Further assessment of historical, natural and potential open space values is required.		
T SMITHS GULLY	CA 50B	0.30	T WONTHAGGI	PART CA 6 SEC 26	5.56
P SUTTON	CA 47C	1.51	Note: Given the quantity of public land at Wonthaggi recommended for potential urban subdivision, the Council believes this area should be retained in public ownership.		
P TANJIL	CA 34A,34B	7.42	T WONTHAGGI	CA 6,7,8 SEC 32	0.31
P TANJIL EAST	CA 10A,10B PT 11C 13C SEC C	3.59	P WONTHAGGI	CA 26H (WESTERN & N.E. PART)	88.00
P TARCOMBE	CA 2D SEC 3	0.50	T WONTHAGGI	CA 8-14 SEC 33	0.93
P TONIMBUK EAST	CA 88T SEC C	3.01	Note: Further assessment of historical, natural and potential open space values is required.		
P TYABB	PART CA 2	64.75	T WONTHAGGI	STHN SECT. CA 1 SEC 109	1.30
P TYABB	CA 32A & CA EAST OF 32A	8.00	T WONTHAGGI	CA 3,4 SEC 26	1.44
P WALLAN WALLAN	CA 3B SEC K	3.51	P WONTHAGGI NORTH	CA 91B	0.06
P WANDIN YALLOCK	CA 62A	3.64	P WOODBOURNE	CA 4C SEC C	3.25
P WANDIN YALLOCK	PARTS CA 39B,39C, 124A SEC B	55.00	T WOODS POINT	C.L IN SEC 4	0.11
Notes:			Y WOODS POINT	CA 4 SEC 19	0.10
1. Remnant vegetation should be protected.			P YALLOCK	CA 3E NO SEC	0.02
2. Any future water treatment facilities should be built on the former quarry site and associated disturbed areas.			P YALLOCK	CA 123A	0.20
P WINDHAM	CA 20D,20E,20L NO SEC	5.00	P YANNATHAN	CA 60E	4.05
P WINDHAM	CA 116C	1.25	P YARCK	CA 46B	5.52
P WINDHAM	CA 112K NO SEC	0.25	P YARCK	CA 53D,53C	7.50
P WINDHAM	CA 54D	2.01	P YARRAGON	CA 17A of E	0.81
P WINDHAM	CA 2B,10F,12C,119D	50.66	P YEA	CL IN CA 146A	0.41
P WINDHAM	CA 123D	1.51	P YEA	CA 144D	0.50
T WONTHAGGI	CA 6 SEC 3C	10.85	T YEA	CA 1A SEC 18	0.81
T WONTHAGGI	CA 48 SEC 54A	6.30	P YUONGA	ADJ CA 18	0.25
Note: Further assessment of historical, natural and potential open space values is required.					
T WONTHAGGI	CL WEST OF SEC 34	2.50			
T WONTHAGGI	CA 70 - 74 SEC 98	0.41			
P WONTHAGGI	CA 41E	0.77			

Appendix XI

LAND EXCHANGE PROPOSALS

The following list includes matters that should be taken into account (with respect to both the freehold land and the public land proposed for exchange) when assessing such proposals.

Conservation values

- * significant or rare plants, or diverse flora
- * important fauna habitat
- * representative areas of land or vegetation types, particularly examples of land or vegetation types that are not contained in existing reserves
- * scenic or landscape features
- * historical associations
- * sites of geological significance

Resources

- * hardwood timber
- * sites suitable for softwoods
- * gravel or stone
- * minerals
- * water supply

Soil conservation and catchment protection

- * existing erosion
- * soil and site characteristics, such as soil group (type), land slope, soil erodibility, soil depth, or site drainage
- * proximity to streams or storages in water supply catchments
- * use of water in storages

Uses

- * informal recreation, or sites providing access into other public land for recreation

- * timber production
- * education
- * utilities

Efficiency of land management

- * manageability of land, with respect to boundaries or shape
- * proximity to existing reserves
- * accessibility from existing roads
- * undesirable effects on adjacent land, such as boundary irregularities, inliers of freehold land surrounded by public land, need for relocation of tracks, increased risk of fire, effects of erosion or weed problems
- * areas of public land made available for freehold land use should in general be added to an existing, adjacent landholding

Additional public costs

- * provision of new roads, utilities, or other services
- * establishment costs for surveying, fencing, and access
- * land restoration costs for cleared or eroded areas

The Council considered that, having assessed proposed land exchanges using the above criteria, for any land exchange to be recommended, it must result in the enhancement of the value to the community of the public land estate.

The financial arrangements for any exchange proposal approved by the Government would be determined by the Valuer-General and the land managing department.